DUBLIN AIRPORT

Regulatory Proposition for Determination 2020+

6 February 2019

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1. Executive Summary

1.1 Overview

The purpose of this Regulatory Proposition is to inform the Commission for Aviation Regulation 'the Commission' of recent developments and future trends at Dublin Airport as the Commission prepares its Draft Regulatory Determination, which is due for publication in Q2 2019 and is expected to cover the five-year period 2020-2024.

This Regulatory Proposition details each of the regulatory building blocks in sequential sections, while placing a large emphasis on ensuring that there is consistency across each of the respective building blocks. We consulted with stakeholders in the second half of 2018 on certain aspects of the forthcoming Determination (e.g. Capital Investment Programme, Service Quality and Passenger Outlook) and the outcome of these consultations has shaped this submission. This Regulatory Proposition should however be considered in tandem with our response[1] to the Commission's Issues Paper in July 2018 and we have therefore sought to avoid repetition between the two.

The overarching theme of this submission is that following a period of sustained and unprecedented growth in passenger numbers since 2014, this has necessitated a rapid response from the Airport to the associated challenges of accommodating this growth in a more constrained environment, while maintaining a quality of service that is acceptable to our key airline partners and passengers.

It is imperative that the Commission's Draft Determination has due regard for the necessary response from the business (e.g. when setting future targets for Operating Costs 'Opex') and that the next Determination period is treated on a standalone basis (e.g. the level of outperformance in the current period should have no bearing whatsoever on the passenger targets set from 2020).

The following components of the 2019 Determination are summarised overleaf and detailed in Section 3 to Section 10 respectively.

Section 3: Service Quality at the Airport (e.g. overall satisfaction with the airport)

Section 4: Projected growth in passengers

Section 5: Operating costs i.e. pay and non-pay

Section 6: Commercial revenue (e.g. car parks and Food & Beverage)

[1] https://www.aviationreg.ie/_fileupload/2019%20Determination/Dublin%20Airport%20(Non-Confidential).pdf

Section 7: Capital investment i.e. maintenance and new infrastructure

Section 8: Weighted Average Cost of Capital i.e. the rate on return

Section 9: Financeability and required pricing – key metrics required to fund new infrastructure

1.2 Maintaining an acceptable level of Service Quality

The passenger is at the core of what we do in daa – the success of the airport depends on passengers being well served and satisfied with their experience. Understanding customer needs, wants, and expectations, balancing requirements of various users and delivering the optimal outcome having regard to efficiency, safety and economic and environmental sustainability is therefore of critical importance. This requires a sustained focus on service quality standards.

There are currently 12 service quality measures ('SQMs') in the Commission's service quality regime at Dublin Airport, which imposes significant financial penalties for targets that are not met. Two of the twelve relate to baggage and another relates to the time it takes to get through security. The other 9 are measured by ACI and the latest scores, compared to CAR's targets, are detailed below:

FIGURE 1.1 SELECTION OF SERVICE QUALITY MEASURES IN PLACE – SCORES FOR Q4 2018

PERFORMANCE AGAINST C.A.R SQM	2015 C.A.R TARGET	Q418	Difference
OVERALL SATISFACTION	3.90	4.09	0.19
COURTESY AND HELPFULNESS OF SECURITY STAFF	3.80	4.16	0.36
EASE OF FINDING YOUR WAY THROUGH THE AIRPORT	3.90	4.21	0.31
FLIGHT INFORMATION SCREENS	3.90	4.27	0.37
COURTESY AND HELPFULNESS OF ALL AIRPORT STAFF	3.80	4.31	0.51
INTERNET AND WIFI	3.10	4.01	0.91
CLEANLINESS OF WASHROOMS	3.50	3.90	0.40
COMFORT OF WAITING/GATE AREAS	3.30	3.59	0.29
CLEANLINESS OF TERMINAL	3.90	4.13	0.23

PASSING WARNING FAILING

As we compete with other airports for passengers and airlines, there is a sufficient incentive in place to ensure a good quality of service at Dublin Airport – the incentive regulation model enforced by CAR seeks to ensure these incentives are real. The 12 SQMs are wide ranging and all encompassing, and it would be disproportionate and unreasonable to augment this list from 2020. Moreover, we firmly believe that measures outside of our control (e.g. immigration queue times) should not be added to the existing expansive list. Should CAR amend the target levels, it should ensure that there is a consistent treatment from an Opex perspective.

Given our ongoing commitment to delivering a quality customer experience, daa proposes a re-evaluation of the effectiveness of an out-dated security queue target. Security is at the forefront of the passenger experience and should not be compromised under any circumstance. The financial penalty associated with the security queue exceeding 30 minutes is at odds with security regulations that emphasise the need to prioritise rigour when processing passengers. Growing capacity constraints, extra security measures and new airline policies put ever increasing pressure on security.

We propose amending the target so that it is set as a percentage of passengers processed within the target level, e.g. 95% of passengers processed within the 30 minutes target. This would allow for the exclusion of the small number of outliers that may arise from the Blip Track system; and take account of certain circumstances that are beyond our control.

1.3 Projected growth in passengers

Passenger numbers increased by an average of 8% per annum between 2015 and 2018, while the number of scheduled airlines at Dublin Airport has increased from 29 in 2014 to 46 in 2018.

In forecasting passenger volumes for the period 2020-2024, daa has pursued a transparent approach, commencing with a consultation with airlines in Q3 2018 with regard to methodology and market outlook. We have been careful to emphasise the challenging, multi-faceted exercise of accurately forecasting demand – with the intrinsically volatile nature of traffic patterns, with numerous factors having an impact. Passenger traffic moves in cycles, akin to economic cycles and demonstrates that recent growth is not necessarily the most accurate indicator of future growth.

Downside risks have emerged, for example, in the form of Brexit and rising oil prices but it is not known exactly how these developments will impact on our future demand profile – due to the uncertainty surrounding Brexit, for example, we have therefore assumed no growth from the UK market in the projections provided below. This is not an unreasonable assumption particularly as growth from the UK has been relatively flat since 2016.

FIGURE 1.2 PASSENGER PROJECTIONS 2019-2024

Over the course of the next determination, passenger growth is expected to stabilise to approximately [redacted] on average.

With airlines unwilling to enter into volume risk sharing, we therefore request as much transparency from the Commission surrounding how it arrives at the passenger targets out to 2024. We would also welcome how the Commission has dealt with a variety of key factors including (i) capacity and planning constraints, (ii) the relevance of Irish GDP in addition to employment trends, consumer confidence and oil prices (iii) downside risks of Brexit and, (iv) operational disruption from necessary infrastructure delivery.

1.4 Operating Expenditure (pay and non-pay)

Frontier Economics have completed an independent bottom up assessment of the Dublin Airport's cost base in 2018 and projected the required efficient operating costs at Dublin Airport for the period 2020-2024 – this information was submitted to the Commission in January 2019 and we have been liaising with the Commission's consultants CEPA and Taylor Airey since November 2018, to assist with their own independent review of operating expenditure.

Frontier's analysis points to Dublin Airport being cost competitive as measured by operating cost to the regulated entity on a per passenger basis in 2017. Frontier have emphasised the pressures daa faced in relation to operating costs in the period 2015-2018. These significant upward pressures on costs include (i) volume growth, (ii) wage inflation and pricing effects, (iii) new compliance measure, and (iv) new infrastructure. In addition to responding to these increasing costs over the period, Dublin Airport continued to strive to achieve efficiencies in its operations and succeeded in implementing efficiencies in a number of its key areas including Cleaning, Energy, Maintenance, Security, IT and Retail.

There is continued upward pressure on Opex as a result of increasing passenger numbers, new infrastructure (in addition to other new lines of Opex such as noise regulation) and

compliance requirements, Frontier has considered the factored into account the future growth profile and projected operating costs rising from [redacted]
This is assuming the proposed Capital Investment Plan is approved by the Commission.

FIGURE 1.3 DUBLIN AIRPORT OPERATING COST FORECAST 2018-2024[2]

Emerging from a period of unprecedented growth, with further growth forecast, daa believes it is vital that we invest in our future in order to keep up with current and future demands on Dublin Airport and the aviation sector in Ireland. Similarly, it is of critical importance that daa is remunerated for the expenditure that is required to service the increasing number of passengers each year.

1.5 Commercial Revenues

Dublin Airport has a long-established commercial business, including retail outlets, food and beverage, property, car parking, concessions, advertising and other passenger-focused services (e.g. lounges and fast track). These commercial activities add value for our passengers and commercial partners.

As part of its regulatory review, the Commission sets commercial revenue targets for each year of the price control. Under the single till model, these commercial revenue targets are used to subsidise aeronautical charges.[3] Increases in commercial revenues over time therefore lead to lower long run aeronautical charges, all else being equal.

Given the long-term benefits from higher commercial revenues, we are incentivised to increase our commercial revenue beyond the target levels established in the Commission's

[2] Incremental Costs (ICs) equate to new lines of Opex. Other CIP refers to new capacity enhancing infrastructure
[3] The exception to this are revenues from activities/assets that have been excluded from the regulatory till.

determination. At the last charges review, the Commission introduced a rolling incentive mechanism to ensure that the incentive to increase commercial revenue is maintained throughout the control period.

In the current regulatory period, our commercial business has performed strongly, with revenues increasing (27%) from €175.8m in 2015 to €224m in 2017. Growth of this scale was not anticipated [by any stakeholders] at the time of the last review and has resulted from a combination of stronger than expected passenger growth, a rebounding Irish economy, effective management initiatives and targeted investment in these services.

We have managed to achieve this growth without jeopardising our value proposition, and our users continue to show high levels of satisfaction with our commercial services. Airlines and passengers will directly benefit from our improved performance as there is a higher commercial revenue base rolling into the 2019 Determination.

Looking to the future, we face a number of new challenges that will result in a slower rate of commercial revenue development.

- **Slowdown in traffic growth**. Passenger numbers increased by an average of 11% per annum between 2014 and 2017. [redacted]
- This will have an impact on the revenue growth potential of those parts of our commercial business that are passenger elastic (e.g. retail).
- **Capacity constraints.** Over the last five years, our commercial business segments have had the supply side flexibility to grow their operations. Following successive years of significant passenger growth, our commercial businesses are now increasingly facing capacity constraints. For example, our Short-Term and Long-Term Red cark parks are full in peak periods, and our commercial property and car rental facilities are operating at capacity. There is limited scope for further revenue growth in these areas until additional capacity is released.
- **Displacement of commercial assets.** These capacity constraints will be exacerbated by the displacement of a number of our commercial property facilities and staff parking to allow for the North Apron and South Apron redevelopments outlined in our CIP. [redacted]

[redacted]

FIGURE 1.4 COMMERCIAL REVENUE PROJECTIONS (€M, 2018 PRICES)

Our intention is to unlock additional capacity over the course of the control period by investing [redacted] in commercial projects. We are in the process of consulting on our CIP, which includes proposed investments in additional car parking spaces [redacted], car rental facilities, and new retail and F&B units. These projects will take a number of years to complete and, in some instances, will not be completed until the last few years of the price control. Based on the assumption that these projects are approved by our users, we therefore project revenue uplifts towards the back end of the control period as this new capacity is released.

Overall, we project that our commercial income will increase from €238m in 2018 to [redacted] in 2024 (in 2018 prices). This is equivalent to an increase in per passenger income from €7.56 to [redacted] in 2024.

The respective tables in Section 6 (from Table 6.14) of this document include a commentary on what assumptions our projections are predicated on – crucially, it identified key risks that have not influenced our projections. In this regard, we request that CAR is transparent with how it arrives at commercial revenue targets from 2020.

1.6 Capital Investment Programme 2020-2024

The Capital Investment Programme (CIP) sets out the necessary investment that is required to realise the opportunity that exists to achieve 40 million passengers per annum (mppa) at Dublin Airport. The proposals are ultimately compatible with the Masterplan (55mppa).

daa undertook a systematic approach to the capital investment requirements of Dublin Airport for the upcoming period;

(i) the first common step toward the Masterplan was incorporated as capacity projects were included in the CIP, this step allows Dublin Airport to increase capacity levels to 40mppa;

(ii) internal due diligence was carried out as all areas created a shortlist of capital investment projects required in the airport ranging from those projects required to maintain infrastructure to capacity and revenue generating projects;

(iii) the CIP was compiled and consultations were carried out with relevant stakeholders on a range of proposed projects, some of which had varying scopes;

(iv) stakeholder feedback, following the extensive consultation process, has ultimately shaped this final submission.

daa's capital investment proposals are summarised in this Regulatory Proposition and the CIP 2020-2024 submission contain two categories of capital investment to reflect the nature of the investment required.

Core Projects

Core projects largely reflect capital expenditure required to maintain existing infrastructure and includes an element of revenue generating commercial projects. Dublin Airport is seeking an allowance of €567m for investment in CORE projects, to manage the day to day operation, to ensure all assets are safe, reliable and secure, to provide elevated security, to enhance the passenger experience through digital technology and to generate commercial revenues to offset airport charges. These projects are a fundamental part of ensuring the existing business can continue uninterrupted by meeting a number of objectives including;

(i) replacement of end of life equipment/assets,

(ii) compliance with safety and regulatory requirements,

(iii) deliver efficiency improvement projects,

(iv) deliver revenue generation projects, and

(v) provide for IT improvements and innovation.

Capacity Projects

Capacity projects are, quite simply, required to meet future demand in a sustainable manner that does not compromise service quality. As a result of the rapid traffic growth experienced in the current period there are emerging capacity constraints across specific modules of airport infrastructure. These capacity projects are required to tactically enhance certain

facilities, otherwise growth will be stifled, and quality of service will deteriorate for customers.

FIGURE 1.5 DUBLIN AIRPORT CAPACITY DEVELOPMENT 2020+

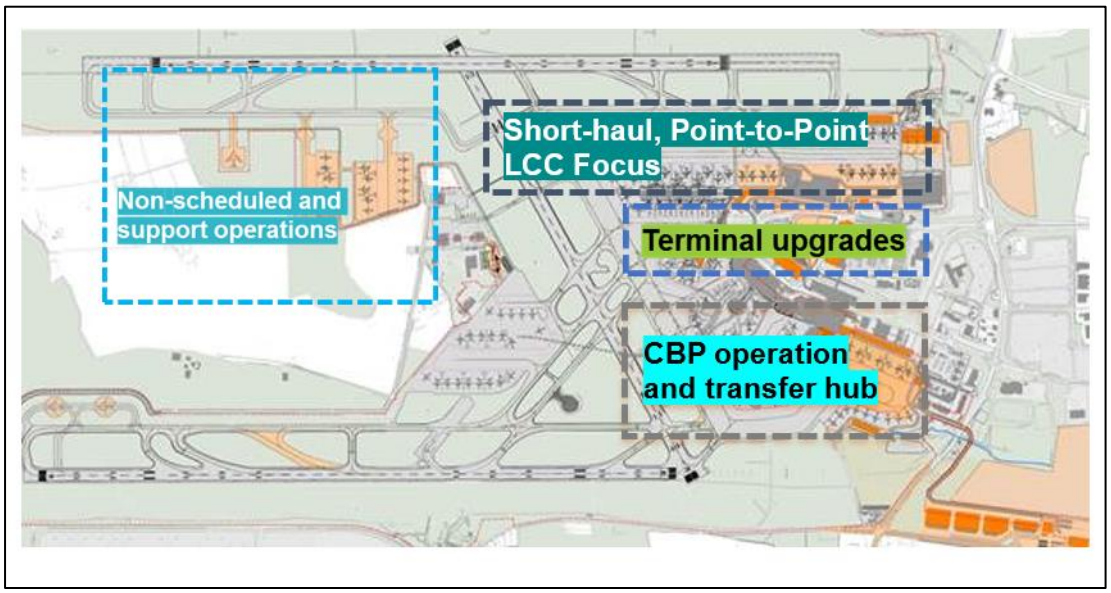


FIGURE 1.6 SOUTH APRON DEVELOPMENT

Figure 1.6 includes:

- Development of new CBP enabled Pier 5, with capacity to handle 8 NB aircraft (or 4 WB);
- Bank of 9 new remote stands, with PBZ (can be used for towing/staging and/or live departures);
- Upgrade of taxiways to dual code E;

- Expansion of US CBP facility.

FIGURE 1.7 NORTH APRON DEVELOPMENT

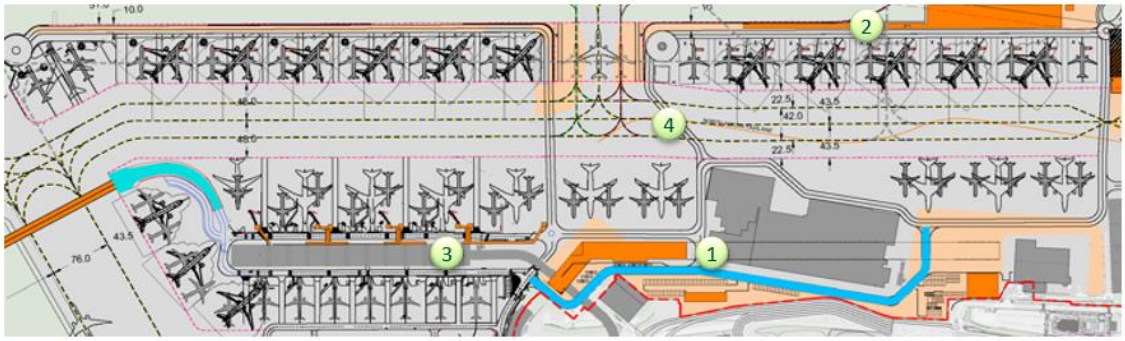


Figure 1.7 includes:

- Development of a new pier (3 phases). At completion, 15 new contact stands delivered. Progress phases 1 and 2 immediately;
- Construction of a new Passenger Boarding Zone on Apron 5H to support live operations across the 12 stands;
- Option to install three airbridges on Pier 1 to support wide-body operations;
- Efficient, full length dual code C North Apron taxiways, with direct access to North Runway line-up points (only 400m).

FIGURE 1.8 UNLOCK WEST APRON

Figure 1.8 includes:

- Requirement for service vehicles and buses to underpass runway 16/34, existing taxiways and a future taxiway
- Development of a new remote aircraft parking apron, initially with 10 stands and ultimately, enabled to support an additional 17 stands. Apron includes dedicated General Aviation parking zone and Code E Engine Test Bay

- An environmental package for airfield drainage to support 40mppa activity

FIGURE 1.9 TERMINALS – FOCUS PROJECT

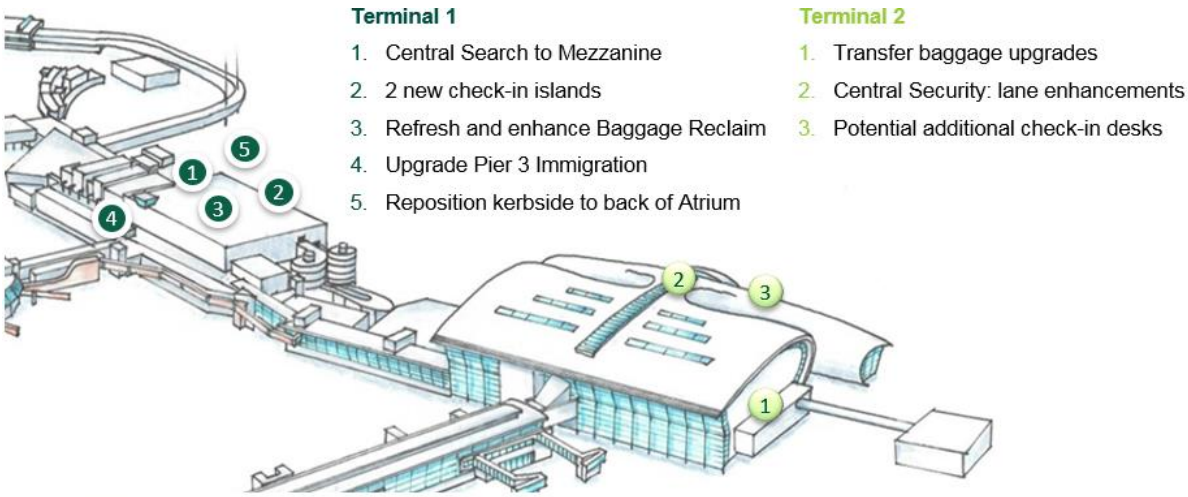


FIGURE 1.10 SUMMARY OF PROPOSED CAPITAL INVESTMENT PROGRAMME

Project Grouping	Total (€)
Asset Care	€284,700,710
Capacity	€1,230,091,778
Commercial	€125,642,364
IT	€78,625,000
Security	€56,398,676
Other	€21,965,266
	€ 1,797,423,793

1.7 Cost of Capital

NERA provided the daa with an independent estimation of an appropriate weighted average cost of capital (WACC) for Dublin Airport for 2020-2024.

NERA used the weighted average cost of capital (WACC) methodology to estimate the cost of capital for Dublin Airport, this is consistent with the approach used to date by the Commission and other Irish regulators. The WACC for a given firm is the weighted return on equity and debt, where the respective weights are determined by the relative proportions of debt and equity given the company's gearing.

The NERA analysis recommends that the real pre-tax WACC for Dublin Airport should be set within a range of 5.0% - 6.2% for the next regulatory determination period.

FIGURE 1.11 NERA COST OF CAPITAL RECOMMENDATIONS 2020-2024

	Lower bound	Upper bound	Method
Gearing	40%	50%	Regulatory precedent and empirical evidence
Cost of Equity	7.5%	9.1%	Calculation.
Cost of Debt	1.2%	3.3%	RFR + debt premium
Pre-tax WACC	**5.0%**	**6.2%**	**Calculation**

Source: NERA calculations

NERA measured the cost of equity using the capital asset pricing model. This resulted in a cost of equity estimate for Dublin Airport for the next determination of 7.5 to 9.1 per cent. This is based on a total market return of 6.6 to 7 per cent, an asset beta of 0.6 and a gearing assumption of 40 to 50 per cent, drawing on regulatory precedent and empirical evidence.

NERA found that the asset beta risk for Dublin Airport had not declined since the Commission's 2014 Determination. It concluded that the asset beta for Dublin Airport should be at least 0.6 going into the 2019 Determination based on the airport's increased risk profile, as well as the latest empirical evidence for its closest comparators.

NERA estimated the cost of debt for Dublin Airport as the sum of the risk-free rate and a debt premium, consistent with the approach used by the Commission in its 2014 Determination and recent Irish regulatory precedent.

Based on this approach, NERA recommended a cost of debt for Dublin Airport of 1.2 to 3.3 per cent based on an RfR range of 0 to 2.0 per cent, an estimated debt premium of 100 basis points and a debt issuance cost allowance of 20 to 30 basis points.

NERA concluded in its report that given that the potential cost of setting an allowed rate of return that is too low is particularly acute for Dublin Airport for the next regulatory determination, the regulated rate of return should be set at the top end of its proposed range at 6.2% to mitigate this risk.

1.8 Financeability and Proposed Pricing

In making its 2019 Determination, the Commission currently has statutory objectives to ensure the financial viability of Dublin Airport. Over the next regulatory period, beginning in 2020, Dublin Airport is projecting spending of approximately €2.15bn on capital expenditure. This capital expenditure of €2.15bn plus anticipated gross debt repayments of [redacted] will create a funding requirement of [redacted] . In addition, the shareholder expectation is for future dividend payments over this regulatory period, further increasing funding requirements.

Dublin Airport's analysis shows that at the current price cap, this will create the potential requirement for new debt ranging [redacted] . Therefore, financial viability is a key consideration in relation to the deliverability of CIP 2020+.

In order to ensure financial viability over the next determination period, the Commission must enable Dublin Airport to maintain its investment credit rating in order to minimise financial risk, access funding markets and raise debt at a reasonable cost and terms.

The scale of capital investment proposed for the next regulatory period will result in financing demands [redacted]
It is vital that the regulatory determination places increased emphasis on ensuring the financeabiity of this CIP 2020+ programme. If this is not sufficiently addressed, Dublin Airport will be unable to proceed with certain projects thus limiting the opportunities for development of the airport going forward.

Dublin Airport has a relatively small share of the European Airport debt market and as such it must match or better its peers in order to be attractive to funders. Dublin Airport's European peer airports are all credit rated at minimum BBB+ or equivalent on their core debt. The practice over the last ten years has been the requirement for stronger investment grade ratings.

FIGURE 1.12 INVESTMENT GRADE RATINGS OF PEER AIRPORTS

	Aeroporti di Roma	Aeroports de Paris	Flughafen Zurich	Luchthaven Schipol	Birmingham Airport
S&P	BBB+	A+	AA-	A+	*NR*
Moody's	Baa1	*NR*	*NR*	A1	Baa1
Fitch	BBB+	A+	*NR*	*NR*	*NR*

	Brussels Airport	Manchester Airport	Heathrow Airport	Gatwick Airport	Copenhagen Airport
S&P	*NR*	*NR*	*NR*	*NR*	*NR*
Moody's	Baa1	Baa1	*NR*	Baa1	Baa1
Fitch	BBB+	BBB+	A-	BBB+	BBB+

Targeting a credit rating of a BBB+ for Dublin Airport will allow headroom, in a highly cyclical industry, for a further downgrade to BBB. A further downgrade to BBB- would have severe negative consequences in relation to Dublin Airport's ability to access capital markets, ability to raise the target financing amount and at optimal terms of such financing (higher margins, shorter maturities and potential requirement for onerous financial covenants which would severely restrict the business).

It should be noted that any reduction in the price cap below the current level would significantly impact Dublin Airport's ability to secure this credit rating required to source this increased level of debt, at market conditions and terms favourable to the airport. Any reduction in the price cap would therefore pose funding challenges where Dublin Airport may not ultimately be able to proceed with certain projects supported by airport users and approved by the Commission.

2. Introduction

2.1 The future of Dublin Airport

2.1 Air connectivity is essential in the international marketplace. This is particularly the case for Ireland as a small open economy positioned on the western tip of Europe. Dublin Airport is a vital element of national infrastructure, with a pivotal role as a key facilitator of economic development at a national and local level. It is therefore critical that the regulatory process takes account of the strategic and economic importance of Dublin Airport.

2.2 Few European airports can match Dublin Airport's connections to Ireland's established markets of Britain and the United States. In addition, Dublin Airport is developing its European links and expanding into the Middle East region and beyond.

2.3 In considering our strategic targets, Dublin Airport has been guided by the National Aviation Policy (NAP), which was published by the Department for Transport, Tourism and Sport (DTTAS) in 2015. Among the goals outlined in the NAP are:

- creating conditions to encourage the development of new routes and services, particularly to new and emerging markets;
- ensuring a high level of competition among airlines operating in the Irish market; and
- optimising the operation of the Irish airport network to ensure maximum connectivity to the rest of the world.

2.4 In addition, the NAP specifically references to the opportunity to develop Dublin Airport as a vibrant secondary hub, competing effectively with the UK and other European airports. A hub combines local passengers with transfer passengers enabling airlines to operate services to more destinations and more frequently than could be supported by local demand alone. Irish aviation policy states that the airport should be developed into a secondary hub over a period of time and that this will involve the construction of a second runway as well as other infrastructure developments. Dublin Airport is seeking to achieve these objectives going forward.

2.2 Recent growth and traffic forecasts

2.5 In section 4 of this regulatory proposition document, daa sets details of its recent Passenger Forecast Methodology and Market Outlook Consultation and its outlook for traffic at Dublin Airport over the next regulatory determination period.

2.6 Over the current regulatory period 2015-2018, Dublin Airport has experienced a strong surge in passenger traffic demand. The airport successfully delivered double-digit traffic growth in 2015 and 2016 (15.4% in 2015, 11.4% in 2016 and 6% in 2017 and 2018) followed by further substantial growth in 2017 and 2018. The compound annual growth rate achieved to date in this regulatory period is nearly double that of the last regulatory determination period.

2.7 While Dublin Airport welcomed the growing passenger numbers, this significant increase in annual airport traffic placed an elevated strain on existing airport infrastructure at the airport, with certain facilities nearing or already operating at maximum capacity throughout 2017 and going into 2018.

2.8 Despite these obvious challenges, Dublin Airport sought to cater for the unexpectedly higher traffic demand by applying short terms solutions to accommodate the higher than expected passenger traffic demand while striving to maintain efficiency and service standards where possible.

2.9 In addition, as part of ongoing airport development and in response to the recent substantial increase in traffic demand, Dublin Airport successfully brought into operation a number of new pieces of infrastructure since 2015 including examples as the Pier 1 extension, the PBZ, the new immigration facilities and the South Apron stands.

2.10 In the Passenger Forecast Methodology and Market Outlook Consultation process, daa highlighted a number of key factors which are likely to influence traffic growth at Dublin Airport over the next regulatory period. This includes factors such as the demand environment, the return to normalised traffic growth, the broadening of the customer base and the emergence of significant downside risks.

2.11 Overall, daa believes that the medium-term outlook for traffic demand remains positive. The demand environment appears healthy and passenger growth should continue at Dublin Airport, but with a maturity towards a more normalised, longer-term trend.

2.12 daa would like to emphasise however, that forecasting demand is a challenging, multi-faceted exercise. The 2009 Determination failed to appreciate the full scale of the recession to follow, while the 2014 Determination struggled to forecast the scale of the economic recovery underway. Economic growth has long been recognised as a key driver of passenger demand. However, the Irish economy has experienced a relatively volatile trajectory over the past decade, thus hampering the accurate mapping of economic activity to short-term passenger demand.

2.13 In previous determinations, the Commission assigned passenger volume risk to Dublin Airport by setting the price cap at a per passenger level. We believe this approach still remains appropriate, given that Dublin Airport is best placed to adjust to changing levels of demand, and because it incentivises Dublin Airport to increase passenger traffic.

2.3 Passenger Satisfaction

2.14 In section 3 of this regulatory proposition document Dublin Airport sets out its vision for the passenger at Dublin Airport over the next regulatory determination period.

2.15 The passenger experience and level of customer satisfaction at Dublin Airport has improved strongly in recent years. Dublin Airport has progressed from scoring at the lowest level of customer satisfaction among peer airports in Europe to performing in the top tier. This improvement has been achieved by implementing significant changes across infrastructure, facilities, systems, processes, products and services, addressing issues/gaps in multiple customer touch-points and transforming how Dublin Airport is experienced by passengers.

2.16 Over the period 2015-2018, overall passenger satisfaction with the airport experience at Dublin Airport has continued to increase with an average score of 4.18 (5.1% better than the previous regulatory period) in the ACI ASQ survey. This overall satisfaction rating at Dublin Airport has been consistently higher than the average rating of Dublin Airport's peer airports (average score of 3.92) over that same period.

2.17 Dublin Airport's strategy requires a sustained focus on understanding and meeting the key needs of passengers as they make their airport journey and challenges the airport to continually meet their expectations. This will ensure that service quality and building on recent progress will remain a priority over the period of the next regulatory determination.

2.18 Dublin Airport's objective is to deliver a quality airport travel experience to the best international standards. We continue to undertake significant passenger research to ensure that our quality of service proposition meets future passenger expectations and needs. daa is working with 3rd parties, such as Failte Ireland to seek to ensure that our national role as the 'welcome hub' to Ireland for the majority of overseas visitors continues to deliver for the tourism industry.

2.19 Dublin Airport has examined the likely impact of factors such as increasing passenger traffic, evolving customer expectations and the introduction of new infrastructure on service quality at Dublin Airport over the next regulatory determination period.

2.20 Dublin Airport is consulting on a proposed Capital Investment Programme which will address service quality considerations specific to new infrastructure. daa has engaged an independent passenger experience agency to evaluate these investment proposals from a service quality perspective.

2.21 In developing this Regulatory Proposition, Dublin Airport consulted with airlines and other stakeholders on the appropriate service quality regime for 2020-2024. To inform stakeholder engagement, daa provided detailed insights into factors such as Dublin Airport's service quality commitment, an assessment of the existing service quality metrics and targets and the potential introduction of new metrics.

2.4 Operating Expenditure

2.22 In section 5 of this regulatory proposition document, Dublin Airport sets out its assessment of operating cost performance over the current regulatory determination period and a forecast for operating costs over the next regulatory determination period.

2.23 Frontier Economics provided daa with an independent bottom up assessment of the Dublin Airport's cost base in 2018 and a projection of the required efficient operating costs at Dublin Airport for the period 2020-2024.

2.24 As part of its review of operating costs at Dublin Airport, Frontier Economics looked at Dublin Airport's cost performance during the current determination period and the differential between Dublin Airport's total outturn costs and the Commission's operating cost allowances over the period 2015-2018. Frontier Economics decomposed this cost differential into its different constituent parts which are primarily volume, price and compliance effects.

2.25 Frontier Economics found that the increase in operating costs at Dublin Airport since 2015 primarily related to measures taken by the airport in response to the unexpected and substantial increase in traffic demand. Furthermore, it found that the response taken by Dublin Airport was reasonable and that a firm operating in a competitive market facing the same conditions and constraints would have likely reacted similarly.

2.26 Despite daa's commitment to improve the passenger experience and maintaining service standards, Dublin Airport has continued to strive to achieve efficiencies in its operations over the current regulatory period and we did succeed in implementing efficiencies in a number of its key areas including Cleaning, Energy, Maintenance, Security, IT and Retail. These combined efficiency measures culminated in an annual cost savings of €10.8m in 2018.

2.27 However, it should be noted that over the period 2015-2018, a number of new compliance measures were introduced by Government which impacted on security operations at Dublin Airport and drove up operating costs by an estimated €10m over the period 2015-2018. These additional costs were not anticipated in the 2014 Determination and were not included in the regulatory cost base.

2.28 For operating costs going forward, Frontier Economics examined the key cost drivers and Dublin Airport's operational needs driving future operating expenditure.

2.29 Frontier Economics developed a transparent cost forecast model capturing the key cost drivers and assumptions on inputs and incorporating the known step changes in the Dublin Airport cost base anticipated for the next regulatory determination period. This model was used to produce the set of operating cost forecasts for Dublin Airport for the period 2020-2024 which are presented below in this regulatory proposition.

2.5 Commercial Revenues

2.30 In section 6 of this regulatory proposition document, Dublin Airport sets out its assessment of our commercial revenue performance over the current regulatory determination period and a forecast for commercial revenues over the next regulatory determination period.

2.31 Dublin Airport is a fully commercial business that receives no funding or financial support from the Government. The airport is funded through a combination of airport charges and the revenue that the company generates from its own retail activity, car parking, property rentals and other commercial income.

2.32 Dublin Airport has a long-established commercial business, including retail outlets, food and beverage, property, car parking, concessions, advertising and other passenger-focused services (e.g. lounges and fast track). These commercial activities add value for our passengers and commercial partners.

2.33 As Dublin airport increases commercial revenues over time, the benefits are passed through to users in the form of lower charges than would otherwise prevail through the application of the single till. In simple terms, the greater our long run commercial revenue, the lower our long run aeronautical charges (all else being equal). Therefore, while Dublin Airport benefits from increasing our commercial income in the short term, these benefits are accrued by airlines and passengers in the long run.

2.34 In the current regulatory period, our commercial business has performed strongly, with revenues increasing (27%) from €175.8m in 2015 to €224m in 2017. Growth of this scale was not anticipated and has resulted from a combination of stronger than expected passenger growth, a rebounding Irish economy, effective management initiatives and targeted investment in these services.

2.35 daa has managed to achieve this growth without jeopardising our value proposition, and our users continue to show high levels of satisfaction with our commercial services. Airlines and passengers will directly benefit from our improved performance as there is a higher commercial revenue base rolling into the 2019 Determination.

2.36 However, going forward, Dublin Airport will face a number of challenges to maintain and grow its commercial businesses.

2.37 daa strongly believe that setting commercial revenue regulatory targets by applying simple passenger elasticities to projected passenger growth, as the Commission did in 2014, is not appropriate for the next regulatory determination period and this would result in highly uncertain and inaccurate targets.

2.38 daa believes that the only viable approach is a forward-looking, bottom up assessment of Dublin Airport's commercial revenue plans, similar to that undertaken by the UK Civil Aviation Authority in recent price controls.

2.6 Capital Expenditure

2.39 In section 7 of this regulatory proposition document Dublin Airport sets out its capital expenditure proposals for 2020-2024.

2.40 The Capital Investment Programme (CIP2020+) presents Dublin Airport's proposals for capital investment at Dublin Airport for the period 2020-2024. These proposals have been reviewed by Dublin Airport's airline customers in an extensive programme of consultation. The capital proposals have been developed in line with the principles of efficient capital expenditure, facilitating forecast demands and stakeholder views.

2.41 The capital projects proposed by Dublin Airport have been developed following an extensive Masterplan exercise, an internal due diligence process, a series of pre-consultation meetings with key stakeholders and formal stakeholder consultation.

2.42 Over the next regulatory period, beginning in 2020, Dublin Airport is projecting spending of approximately €2.15bn on capital expenditure. Dublin Airport has put forward its CIP 2020+ proposals totalling €1.797bn which comprises 74 core and 18 commercial infrastructure projects with an estimated combined cost of approximately €567m, plus an additional 25 capacity related projects with an estimated cost in the region of €1.23bn. In addition, Dublin Airport is committed to a further €350m expenditure on the North Runway, PACE & T1 HBS projects.

2.43 The delivery of this programme would enable Dublin Airport to develop in a sustainable manner and accommodate 40 million passengers per annum (mppa). It is imperative that the airport is adequately positioned to accommodate 40 mppa by the end of the next determination period, or shortly thereafter, if we are to avoid a situation whereby inadequate infrastructure is in place to cater for demand at Dublin Airport.

2.7 Cost of Capital

2.44 In section 8 of this regulatory proposition document NERA's recommendations for the cost of capital for Dublin Airport for 2020-2024 are set out.

2.45 The cost of capital is one of the key building block elements that needs to be considered as part of the forthcoming regulatory review. An appropriate deviation of the value for this variable is essential to ensure the integrity of the 2019 Determination and the financial viability of Dublin Airport going into the next regulatory period.

2.46 NERA measured the cost of equity using the capital asset pricing model (CAPM), which assumes that the cost of equity for a firm is given by

$R^E = RfR + \beta\ (TMR - RfR)$ *where* $TMR - RfR = ERP$

where R^E is the return on equity, RfR is the risk-free rate, β is the measure of the systematic risk of the company's equity with the market portfolio, and TMR is the total return on the market portfolio which is equivalent to the risk-free rate plus the equity risk premium.

2.47 NERA estimated the cost of debt (RD) as the sum of the risk-free rate and the debt premium (DP), which reflects the risk of debt in excess to the risk-free rate $R^D = RfR + DP$

2.48 NERA calculated the cost of equity for Dublin Airport using the TMR approach. This involves measuring the total market return directly, and then calculating the constituent elements by subtracting the observed from the TMR estimate to derive an equity risk premium (ERP). The TMR approach contrasts with the alternative approach that estimates the ERP and RfR separately and independently. Empirical evidence shows that ERP and RfR negatively co-vary, e.g. with the ERP increasing during periods when monetary policy is relaxed and the RfR is low, as per current market conditions. This implies that over long timeframes, the ERP and RfR have moved point-by-point in opposite directions. A TMR approach ensures that the ERP and RfR are estimated jointly and consistently; by contrast, an approach that provides for independent estimation may provide for a total market return that is below investors' cost of capital.

2.49 It should be noted that unless the Commission allows for a cost of capital for Dublin Airport that adequately compensates our investment, there will be potential financeability repercussions with a material risk that Dublin Airport will not be able to deliver the proposed capital programme for 2020-2024.

2.50 In section 9 of this regulatory proposition document Dublin Airport sets out its views on financeability for the next regulatory determination period.

2.9 Financeability

2.51 Despite Dublin Airport's success in growing passenger numbers while driving down operating costs and increasing commercial revenues, Dublin Airport as a regulated business remains under intense profitability pressure, with the allowed return-on-assets and financeability both critical considerations going forward.

2.52 In order to ensure financial viability over the next determination period, Dublin Airport must be able to maintain its investment credit rating in order to minimise financial risk, access funding markets and raise debt at a reasonable cost and

terms. It should be noted that any call from airlines and lobby from other interested parties for lower airport charges at Dublin Airport will threaten and limit the opportunities for the development of the airport in the medium term.

2.9 Approach to Next Regulatory Determination Period

2.53 In approaching the next regulatory determination period, Dublin Airport will strive to maintain the economic maintenance of the existing assets and the development of new infrastructure to accommodate growth while ensuring

- Professional exploitation of commercial opportunities
- Efficient processes and operating costs
- Competitive aeronautical pricing, including market-leading discount incentives for new routes and increased volume on existing routes
- Continued focus on the passenger experience

2.54 This regulatory proposition should be considered in conjunction with the detailed appendices which accompany this document. Details of these appendices are provided in the table below.

Appendix	Name	Topic	Source
Appendix 1	Capital Investment Programme Submission	Capital Expenditure	Dublin Airport
Appendix 2	Frontier Economics operating Expenditure Report	Operating Expenditure	Frontier Economics
Appendix 3	NERA Cost of Capital Report	Cost of Capital	NERA
Appendix 4	Passenger Outlook Consultation and Summary of Responses	Traffic Forecasting	Dublin Airport
Appendix 5	Service Quality Consultation and Summary of Responses	Service Quality	Dublin Airport

2.10 Brexit

2.55 The purpose of this regulatory submission is forward-looking. We describe in detail our service quality proposition, our traffic forecasts, our forecast for efficient operating costs and for developing our commercial revenues. We present our capital expenditure proposals and pricing proposals for the regulatory period ahead.

2.56 The nature and timing of the UK's exit from the EU, whether it is orderly or disorderly, will be a critical factor for Dublin Airport with scope to impact directly through new operational requirements arising from the UK exit from the EU and indirectly through the impact on the growth of the Irish economy in forthcoming years.

2.57 It should be noted that with reference to Brexit, this Regulatory Proposition has been prepared on the basis of a smooth transition period and specifically by assuming that passenger growth to and from the UK will remain subdued out to 2024 i.e. relatively consistent with trends since 2016. Similarly, our capital investment proposals have considered the implications associated with a hard Brexit, but we have not requested an additional allowance for the associated infrastructure requirements (e.g. immigration) in this submission.

2.58 In the event that a no deal or 'bad deal' transpires, the Commission should reflect these changed circumstances in the respective targets associated with the regulatory building blocks. We request full transparency from the Commission in this respect and are willing to engage with Brexit related developments in the months ahead.

3. Focus on the passenger

3.1 Introduction

Improved service quality

3.1 Dublin Airport has been on a significant journey over the past 12 years from the perspective of passenger experience and satisfaction. We have progressed from a position of scoring the lowest level of customer satisfaction among peer airports in Europe to performing in the top tier. This improvement has been achieved by implementing significant changes across infrastructure, facilities, systems, processes, products and services, addressing issues/gaps in multiple customer touch-points and transforming how Dublin Airport is experienced by passengers.

3.2 Critically, this marked improvement in service quality has coincided with unprecedented growth in the number of passengers using the airport, but it has not been achieved without cost. Underpinning this progress is an airport strategy that demands a sustained focus on understanding and meeting key needs of passengers as they make their airport journey and challenging ourselves to continually meet their expectations. This will ensure that our focus remains on service quality and sustaining this recent progress over the period of the next regulatory determination.

The experience of passengers

3.3 We have sought to get a better understanding of the complex, multi-faceted nature of "the" passenger experience at our airport. We consider the passenger experience to be much more than the direct interaction with the airport – in other words, the airport journey begins long before a passenger enters the airport and following this visit. A positive or suboptimal airport experience can, for example, affect passengers following their visit through the airport as they continue their onward journey and beyond.

3.4 With staff typically not in control of all aspects of the passenger experience this makes the task of delivering a consistently good experience unique and challenging when compared to other customer experiences. This challenge is compounded by the tendency for passengers to view the airport as the guardian and custodian of their experience. This underscores the need for airports to take a community view of service delivery and standards, ensuring that all staff are involved in the delivery of the products, services and processes that comprise the airport journey.

Increased volume of passengers

3.5 The surge in air transport demand is placing significant pressure on available infrastructure in many airports around the world. Dublin Airport has been experiencing continued passenger growth at an average of 10% growth over the period 2014-2017, which has resulted in Dublin Airport moving from the 5-25m ACI ASQ comparator group into a new and challenging 15-40m group since 2016. Although Dublin Airport's ASQ score has remained relatively stable during this period of intense growth, the ranking for overall passenger satisfaction has declined from 4th in Q2 2017 to joint 6th in Q3 2018.

Evolving customer expectations

3.6 The growth of the low-cost airline model and an increasing appetite and ability amongst an ever-broadening segment of the population to travel more often has led to higher expectations. Key consumer demands that have received increased focus include the following:

- fast issue resolution;
- hassle-free transactions;
- consistent, high quality performance;
- a comfortable environment;
- shared feedback;
- a high level of personalisation;
- communication via multiple channels;
- accurate and transparent information;
- constant customer service availability and staff empathy.

A more diverse passenger profile

3.7 Our passenger profile is also changing, owing to the range of new routes and destinations served by Dublin Airport. Passenger demographics can impact the perception of service performance. For example, the global travelling population is ageing and ACI ASQ scores support the fact that older passengers are more difficult to please compared to the general airport population. This is certainly the case at Dublin Airport and from an overall satisfaction perspective, our older passengers score lower on average – however, owing to the complexity of measuring this area, satisfaction improves when the airport is less crowded and busy. Other airports have

targeted this issue with investment, including Rome Fiumicino and Helsinki, in order to increase these satisfaction levels.

Looking ahead to new infrastructure

3.8 Dublin Airport is consulting on a proposed Capital Investment Programme which will address service quality considerations specific to new infrastructure. Ultimately, we foresee the airport wide service quality regime applying to this new infrastructure and in this regard we have engaged an independent passenger experience agency to evaluate the proposals from a service quality perspective.

3.2 Dublin Airport's Service Quality Commitment

International developments

3.9 In 2017, more than half of the world's 7.1 billion passengers used an ASQ airport and as competition in the airport industry grows, passenger experience and continuous service improvement becomes more key for business performance. Service quality standards are increasing globally implying that when our scores remain level or unchanged, it is plausible that we are still improving but that other airports may be improving at a faster rate.

3.10 Many airports, of which Dublin is one, are starting to make it a high priority to broaden the interpretation of service quality to include the overall passenger experience at the airport. Improving the overall passenger experience demands that we both understand the role that an airport plays in a passenger's overall end-to-end journey, and that we consider both the increasing rational and emotional travel needs and motivations of our passengers.

Passenger research programme

3.11 Dublin Airport has continued to expand our significant passenger research programme to ensure that our quality of service proposition meets future passenger expectations and needs.

3.12 We also consider it important to work with 3rd parties, such as Failte Ireland for example, with whom we seek to ensure that our national role as the 'welcome hub' to Ireland for the majority of overseas visitors continues to deliver for the tourism industry. In this regard, we are currently serving on the Failte Ireland Orientation

Steering Group, which aims to ensure that visitors arriving into Ireland find it as easy as possible to move through the airport and get to their final destination.

3.13 We assess many sources of passenger feedback, including face-to-face passenger tracking, a Customer Service Monitor, social media monitoring and other direct passenger feedback. We focus on driving positive outcomes (distilled as passenger satisfaction) over time by monitoring key services and the impact of factors such as pier of departure as well as drilling into influencing attributes for critical areas such as departure gates and washrooms. This input has led to many passenger-facing improvements, which is detailed throughout this document.

FIGURE 3.1 VOICE OF THE PASSENGER: PLANNING FOR A FUTURE MINDSET

3.14 We also use quantitative research to produce a strategic improvement matrix which the whole business uses to determine service priorities. We build on this with quantitative and qualitative research to provide a deeper understanding of areas where additional focus is required. Dublin Airport's research programme employs a multi-faceted approach to understanding our passenger.

Fundamental passenger needs: Premises, Processes and People

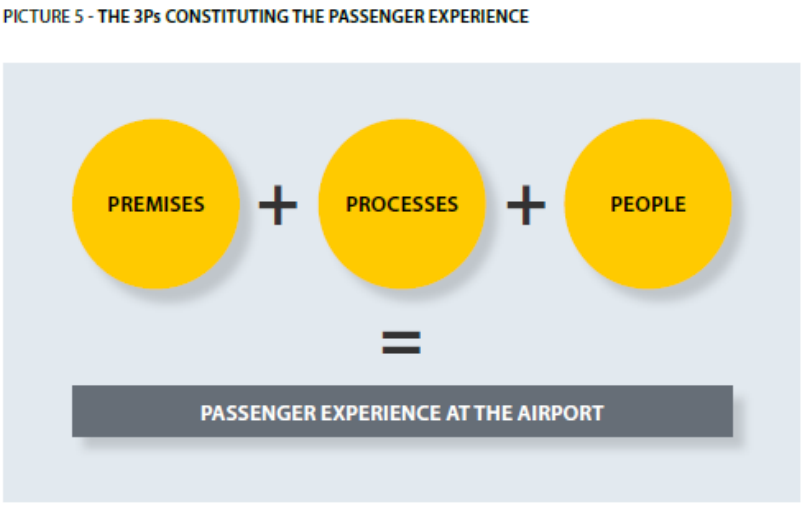
3.15 ACI define three pillars that constitute passenger experience, which is based on many years of global research at airports. While the challenges and situation of individual airports may differ, across all airports these pillars help define a number of common, fundamental needs that must be addressed in delivering a positive passenger experience. Those key needs are as follows:

- Clean and attractive

- Easy to navigate and accessible
- Positive ambience and a sense of place
- Smooth processes, thorough but avoiding unnecessary steps
- Clear and adequate information
- Courteous and helpful staff

3.16 The interplay of these needs should create within the passenger a sense that they are in a safe and controlled environment.

FIGURE 3.2 THE 3PS CONSTITUTING THE PASSENGER EXPERIENCE



Source: ACI, Guidelines for passenger services at European Airports

Key drivers of satisfaction

3.17 While these fundamental needs do not differ between passengers around the world, individual airports face their own specific issues and challenges within the passenger journey. In order to understand what these are for Dublin Airport, a number of research studies are conducted to provide a statistically representative understanding of our passengers, their needs and how we are performing across key touchpoints and in-service attributes across the airport journey.

A. Passenger tracking

3.18 We carry out 21,000 face-to-face interviews at departure gates per annum, which is fully representative of Dublin Airport traffic. Key outputs include:

- demographic profile;
- modal choice;
- car parking usage (including competitors);
- check-in profile;
- luggage profile and connecting traffic data.

3.19 The outputs of this quantitative research are used across the organisation, including aviation business development, retail, operations and commercial.

B. Customer satisfaction studies

3.20 Dublin Airport utilises the following customer satisfaction studies:

1. Airport Council International (ACI) – Airport Service Quality (ASQ) – 3,000 questionnaires distributed at the departure gates and analysed by ACI against other global airports that enables us to benchmark our performance. Arrivals responses are based on previous experience;
2. Dublin Airport Customer Satisfaction Monitor (CSM). A bespoke survey covering both arrival and departures, consisting of 8,500 interviews per annum at departure gates. Passengers are asked to rate satisfaction with specific airport services/processes, with the objective of providing greater detail and granularity to gain a deeper understanding of reasons for dissatisfaction;
3. Ad hoc quantitative and qualitative studies. In 2018, we have conducted in depth accompanied airport experience journeys with passengers, focus groups to increase compliance on liquids, aerosols and gels (LAGS) in security, and a Dublin Airport website user experience study to identify improvements that can be made to the web site user experience amongst others.

3.21 Some of these issues and challenges will be important in considering and managing passenger experience. These are referred to as satisfaction drivers, i.e. individual aspects of the passenger experience in the airport currently having the biggest effect on passenger satisfaction, either positively or negatively. At Dublin Airport, analysis techniques such as regression analysis are used to assess what the key drivers are – we then focus attention on addressing drivers that are currently negatively impacting passenger experience while ensuring that performance on drivers that are currently driving satisfaction is supported and maintained.

3.22 Based on ongoing research conducted by the customer service quality team at Dublin Airport, we have identified the following 'key drivers' of passenger satisfaction during 2018:

1. Security process: Waiting time, space and layout
2. Cleanliness of toilets and washrooms
3. Waiting time at check in
4. Ease of movement

3.23 In addition, there are three measures that are rising in importance as consumer trends change and the quality of dwell time at airports becomes more important to consumers:

1. Wi-fi quality
2. Standard of decor/comfort of departure gate seating
3. Food and beverage offering at departure gates

3.24 Of the key drivers identified, waiting time at check-in is not directly controlled by Dublin Airport, as discussed further below. Food and Beverages at departure gates is not measured by the ACI survey. Otherwise, the key drivers of customer satisfaction are captured in the existing SQM regime and provide a reasonable overall picture of Dublin Airport's performance in the eyes of its passengers.

Passenger Journey Understanding and Management Programme (JUMP)

3.25 The JUMP programme commenced in 2016 with an objective to better understand the role that Dublin Airport plays in a passenger's overall end-to-end journey and the interplay between the various aspects of the passenger journey from touchpoints to underlying business processes. With the key drivers of satisfaction at its core, this programme aims to enhance our capability to improve passenger experience and improve our satisfaction scores.

1. End-to-end journey mapping. We have worked with employees, airline customers and third-party partners to detail the end-to-end journey stages and steps (Departure, Arrivals and Transfer journeys) that passengers move through at the airport from planning and booking their journey, to departing Dublin Airport, together with the specific 'passion' and 'pain' points of the journey. See Appendix 1 for the Departure and Transfer journey map.
2. Journey measurement principles: Strategic, Actionable, Predictive, Sustained. We focus on improving the 'pain points' for passengers where the measures of satisfaction have a strong correlation to overall satisfaction scores:

3.26 JUMP analyses all the elements in the passenger journey through the airport and uses statistical modelling to show us the measures that are most likely to explain any

drops in satisfaction scores. In other words, this gives us further evidence of what we should prioritise to maintain and build satisfaction at Dublin Airport.

3.27 In summary, JUMP assists with identifying the most cost-effective means of identifying and enhancing the most important aspects of service quality in the airport at a given time.

Dublin Airport passenger experience strategy

3.28 Taking account of the significant body of research on passenger experience completed in Dublin and across airports globally, in addition to broader macro studies on consumer needs and trends, Dublin Airport has developed a passenger experience strategy to define the type of passenger experience that we want to create. This has fundamental needs and satisfaction drivers at its heart and encompasses the three aspects of facilities, processes and staff.

3.29 In what can feel like a stressful and de-humanising experience for passengers, Dublin Airport has an objective of ensuring that all passengers to feel 'cared for and looked after'. The level of care and attention required to achieve this feeling will differ between passengers.

3.30 Frequent travellers may simply want efficiency and light touch interaction, using technology to self-serve as much as possible while less frequent travellers or those with a disability may want much more, including direct interaction with airport staff at each stage of their journey. Our strategy is designed to be inclusive of all passengers and ensure that irrespective of how and why a passenger is travelling, they will feel cared for and looked after. Dublin Airport's overall customer service proposition is summarised below in Figure 3.

FIGURE 3.3 DUBLIN AIRPORT PASSENGER EXPERIENCE STRATEGY

Dublin Airport Passenger Experience Strategy – Humanity in the digitech age

Our strategy is	**To put the human at the heart of everything we do every time, so we become the airport everyone recommends** ***"We want to deliver intentionally differentiated experiences that passengers will remember" taking key opportunities to delight***			
We want customers to feel…	**Cared For and Looked After**			
Passenger promises	**We'll make it seamless**	**We'll make it relevant**	**We'll make it effortless**	**We'll add the 'human touch'**
It means that…	We'll make it quick – security/queue time/walking distances. Where we have to build in walking distance we will make the journey entertaining/interesting with the use of décor/visual environment/attractive advertising It will be free of any hassle It'll be clear e.g. easy wayfinding and clarity of direction It'll be consistent You're informed	We'll understand your needs and deliver what you need when you need it - Clean, comfortable facilities; specifically standards of toilets and washrooms We'll communicate only what's relevant We'll show you that we appreciate you being a customer and we know you have a choice We'll behave ethically	We'll keep you safe We'll be transparent We'll be proactive and anticipate what you need to know when you need to know it We'll make it stress free and comfortable We'll make being responsible easy – and let you know what you've contributed to We'll make it jargon free	We'll be empathetic – our 'humans' will be courteous, warm and polite We'll resolve any problem quickly We'll explain things properly We'll make you feel welcome We'll listen We'll show your our employees faces We'll make your dwell time 'down time' areas – productive, comfortable, satisfying, bonding, enriching - F&B outlets/space - Departure gate décor and seating - Visual environment

3.31 Given the emphasis placed on service quality at the airport and our continued commitment to delivering a quality customer experience, our informed view is that the existing service quality metrics regime is by and large fit for purpose.

3.32 Irrespective of any service quality regime, significant incentives exist for us to provide a good service quality to passengers. We would, for example, risk losing passengers and their associated spend if our experience was suboptimal.

3.3 Review of Existing Metrics and Targets

Existing metrics and targets

3.33 In 2009, the Commission introduced a service quality term to the price cap formula, creating a direct link between the price cap on airport charges and the quality of service at Dublin Airport. There are 12 service measures in the monitoring scheme, summarised below in Table 1.

3.34 We are of the view that while all 12 measures remain appropriate, certain targets need to be revaluated in the context of the rapid and unanticipated growth in traffic that we have accommodated throughout the current determination period 2015-2019.

TABLE 3.1 EXISTING SERVICE QUALITY MEASURES AT DUBLIN AIRPORT

	Metric	Data source	2015-19 target	% of revenue at risk
1	Percentage of passengers queuing for less than 30 minutes	Dublin Airport system based	100%	1.5
2	Percentage of time out-bound baggage handling system unavailable for more than 30 minutes during hours of operation	Dublin Airport system based	0	0.75
3	Percentage of time in-bound baggage handling system available during hours of operation	Dublin Airport system based	99%	0.25
4-12	Nine subjective measures of service quality based on passengers' views	ACI passenger survey	Ranging from 3.1 to 3.9	2.0%
	Total			**4.5%**

Consultation with airport users

3.35 In developing our Regulatory Proposition, we consulted with airlines and other stakeholders on the appropriate service quality regime at Dublin Airport for 2020-2024. The consultation paper, and summary of response to consultation paper, are attached in the Appendices.

3.36 To inform stakeholder engagement the consultation provided detailed insights in the following areas:

- Dublin Airport's service quality commitment;
- Review of existing metrics and targets;
- The appropriateness of new metrics;

3.37 The consultation paper also discussed other related matters, including: existing targets, revenue at risk, objective and subjective measures, symmetry of financial incentives, link with Opex, and the passenger advisory forum.

3.38 We received a single response to the consultation. The lack of responses is possibly indicative that, by and large, users are generally satisfied that the current regime the

Commission has in place is fit-for-purpose and should be extended into the next determination period.

Security queue target and performance

3.39 The security queue remains one of the key drivers of customer satisfaction at Dublin Airport. However, the security queue metric, which was introduced by the Commission in 2009, has become somewhat outdated due to the increasing European threat level and should be revised to better reflect the current requirements of airport users.

3.40 Given the evolving security regulations and the unanticipated surge in passenger growth, it is an opportune time to re-examine the logic underpinning the 30-minute target. The defined 30 minutes appears somewhat arbitrary and has partly originated from airline concerns that passengers spending more than 30 minutes in a security queue could delay aircraft and affect the efficiency of their operations and OTP. The financial impact of adhering to this target also needs consideration as the increasing costs in security staff have important implications from the perspective of operating expenditure, which in turn affects the price that each passenger pays for use of the airport.

3.41 The financial penalty associated with the security queue exceeding 30 minutes is at odds with security regulations that emphasise the need to prioritise rigour when processing passengers. We currently have one regulation stipulating the need to avoid exceeding 30 minutes at any given time, and separately have to comply with regulations that stipulate that the safety of passengers should not be compromised under any circumstances.

3.42 The purpose of airport security is to protect civil aviation from acts of unlawful interference. The Department of Transport Tourism and Sport are responsible for drawing up, applying and maintaining the National Civil Aviation Security Programme (NCASP).

3.43 There have been several key developments regarding this target since it was first introduced by the Commission. These include:

1. The terminals have become more capacity constrained as the volume of passengers increased from 20.5m in 2009 to an estimated 31.5m in 2018, a 54% increase. There were three breaches of the target in Q2 2018 alone, and a likelihood that the

incidence of breaches could increase further in 2019 as traffic continues to grow and the airport becomes even more congested.

2. Additional security measures, such as the introduction of Explosive Trace Detection for both passenger and cabin bags, add to the complexity of the security process and requires more processing time.

3. Certain new policies introduced by airlines (e.g. Ryanair) has resulted in luggage coming through security that might otherwise have been checked-in. This slows down the security check process.

4. Crucially, we are actively targeting the security bottleneck through a capital investment programme and believe that in the interim we should not be unfairly penalised with this stringent target of 30 minutes that applies at all times without exception.

3.44 Furthermore, issues such as space and layout are important considerations for passenger welfare which are not captured by measuring queue time and our quantitative research analysis shows these are equally drivers of satisfaction.

3.45 The Blip Track automated system used by Dublin Airport to calculate the security queue time is prone to outlier results, which can inadvertently trigger a breach of the target. In 2016-2017, the Commission conducted an audit to assess whether the passenger experience is accurately reflected by the maximum queue time reported by Dublin Airport. The audit results found that while this system allows for the collection of a much larger sample of queue times than would otherwise be feasible, the trade-off is the introduction of what appears to be inaccuracy into the measurements. In some cases, particularly when the queue is very short, it appears that the current methodology overstates the length of the queue.

3.46 While the security target has become more difficult to meet as the volume of passengers has increased at the airport, Dublin Airport endeavours to process the vast majority of passengers much faster than the 30 minutes prescribed by the Commission. We propose that the security queue target should be re-designed to emphasise system performance across the broad volume of passenger throughput, rather than focussing on a small subset of activity (i.e. limiting the number of breaches of a maximum target level). Airlines and passengers benefit more when the overall processing time is reduced compared to when a small number of breaches are avoided.

3.47 The current target does not incentivise 'average' queue times to reduce, as there is no distinction between a passenger taking 30 minutes or 20 minutes to pass through security.

3.48 Dublin Airport would recommend going forward that the Commission sets the target as a percentage of passengers processed within the target level, e.g. 95% of passengers processed within the 30 minutes target. This would allow for the exclusion of the small number of outliers that may arise from the Blip Track system; and take account of certain circumstances that are beyond our control.

Baggage metrics

3.49 The two existing baggage metrics are:

1. Outbound baggage belt availability, which impacts on the satisfaction of departing and transfer passengers
2. Inbound baggage belt availability, which impacts on the satisfaction of arriving passengers

3.50 For the outbound baggage target, if a baggage belt connecting to a check-in area is unavailable for more than 30 minutes, Dublin Airport must provide an affected airline or ground handler access to an alternative baggage belt within 30 minutes of the party notifying Dublin Airport that it requires access to an alternative baggage belt. This target is a daily measure, reported to the Commission on a monthly basis. Dublin Airport has not breached this metric so far during the current Determination and there has not been a request for an alternative out-bound baggage belt from a baggage handler or airline.

3.51 The inbound baggage handling target is for the system to be available at least 99% of the time during hours of operation. Dublin Airport has not breached this target so far during the current Determination process. This target is a monthly measure, reported to the Commission on a quarterly basis. During Q3 2018, the inbound baggage handling system was available for 99.9% of the time on average across T1 and T2. For inbound belts, we receive requests for alternative belts on a regular basis, but these relate to airline preferences / operational reasons rather than technical issues or faults. As the inbound measure is based on percentage availability, a request for an alternative belt is not measured.

3.52 We have performed well on both baggage measures during the period of current determination to date. However, these targets will become increasingly difficult to meet due to the change in baggage check policy by Ryanair (and potentially also Aer Lingus) which will see a significant increase in the percentage of checked bags per

passenger. When combined with continued growth in passenger traffic, the existing baggage systems will need to handle a significant increase in baggage volume.

3.53 Furthermore, the forthcoming project to implement an EC Directive on Explosive Detection System (EDS) Standard 3 in Terminals 1 and 2 may negatively impact on the outbound and inbound baggage handling systems while the works are underway.

3.54 Therefore, we see no room for the current outbound or inbound baggage target levels to be tightened. Given the challenges outlined, we believe the outbound baggage target should be re-set as a % availability target, which would be consistent with the approach taken for the inbound measure. During the 2014 Quality of Service consultation, the Commission accepted that there will be occasions where the outbound baggage system stops operating because of the actions of agents working for airlines or ground handlers loading bags incorrectly.

ACI ASQ's

3.55 The nine existing passenger satisfaction measures are listed in Table 2. These measures are derived from a survey of departing passengers conducted by ACI at airports worldwide. The survey is used by the Commission to benchmark Dublin Airport against comparator airports in Europe. The ACI scores range from 1 = Poor to 5 = Excellent. Six of the nine ACI metrics had their targets increased for the current Determination period, whereas three (courtesy / helpfulness of airport staff, courtesy / helpfulness of security staff, and Internet / Wi-Fi) are unchanged since their introduction in 2009.

TABLE 3.2 ACI SERVICE QUALITY MEASURES APPLIED AT DUBLIN AIRPORT

	Metric	CAR target 2015-19	% of revenue at risk
1	All passengers (overall satisfaction)	3.9	0.25
	Ease of wayfinding through airport	3.9	0.25
3	Flight information screens	3.9	0.25
	Cleanliness of airport terminal	3.9	0.25
5	Cleanliness of airport washrooms / toilets	3.5	0.25
	Comfort of waiting / gate areas	3.3	0.25
7	Courtesy / helpfulness of airport staff	3.8	0.10
	Courtesy / helpfulness of security staff	3.8	0.15
9	Internet / Wi-Fi	3.1	0.25

3.56 Dublin Airport has consistently outperformed the daa targets set in 2014, but we are facing challenge with respect to overall satisfaction, which is a function of performance in general across all areas (measures and non-measured).

3.57 The following three measures have been particularly challenging:

- comfort of wait / gate areas
- cleanliness of terminal
- ease of way finding

3.58 Notwithstanding these challenges, we have been actively targeting these areas in order to improve the level of service quality.

3.59 A programme was initiated to reupholster all the departure gate seats in Pier 3 with a more comfortable material, at a cost of €400k. This initiative led to a growth in satisfaction with the seating and overall satisfaction with the departure gate experience.

3.60 During the current Determination we have upholstered Terminal seating and Comfort seating. Details are provided in table 3.

TABLE 3.3 UPHOLSTERED TERMINAL AND COMFORT SEATING 2015-2018

Terminal seating	Comfort seating
Pier 1 - 621 seats upholstered	Pier 3 - 43 units reupholstered
Pier 2 - 555 seats upholstered	T1x - 8 units reupholstered
Pier 3 - 375 seats upholstered	T1x - 6 seating pods reupholstered

3.61 We also added additional terminal seating as part of the following projects:

- PBZ / South Gates - 444 seats
- Pier 1 extension - 192 seats
- Pier 2 bus lounge - 178 seats
- Gates 336-337 bus lounge - 89 seats

3.62 In addition to the above, specialist bench style seating was also purchased for arrival passengers.

3.63 A major review was implemented to improve the facilities and service in this area, including a review of current process and cleaning products used, trialling of new cleaning products and new training method employed by the cleaning team in T1 (April 2018).

3.4 Potential new measures

Transfer passengers

3.64 Dublin Airport has a strategic target to develop our airport as a hub, connecting passengers from the US and Canada with mainland Europe. The number of transfer passengers increased from 550k in 2013 to 1.6m in 2018, increasing from 3% to almost 6% of total passengers and is targeted to reach 10% by 2025.

3.65 We opened a dedicated transfer facility in August 2018 resulting in a significant number of passengers not required to go through a security check. Therefore, a transfer security queue measure is not appropriate.

3.66 Transfer passengers arriving from third state countries will go through a security check via the T2 transfer corridor (e.g. Emirates and Turkish Airlines flights) but these represent a small proportion of overall transfer passengers. Aer Lingus transfer passengers arriving on pier 3 are bussed to the new transfer facility on a trial basis.

US Preclearance passengers

3.67 The number of passengers using the CBP facility has increased from 654k in 2012 to 1.6m in 2018. With almost one-third of CBP passengers transferring through Dublin, it is likely that sustained growth will continue for a number of years as we continue to develop as an international hub. It may be appropriate to inform passengers about expected queue times – data on security queue times in the CBP facility are tracked via the Blip Track system.

Passengers with Reduced Mobility (PRM)

3.68 Dublin Airport re-designated the ''family and assistance" security lane in T1 and T2 as an 'assistance' lane in 2018. However, PRMs are also often processed via the standard security lanes, whereby they are facilitated to skip the queue. Given the difficulty of designing a measure which only targets PRM passengers, and the practice of allowing these passengers to skip the queue, we do not consider that a PRM security queue measure is appropriate.

3.69 PRM reserved waiting time is worthy of consideration and we are actively targeting improvements in this experience. We expect to have renewed the PRM contract in T1 shortly with improvements in the service expected from 2019. The relevant modifications and improvements should be welcomes by airlines also, as this measure can impact on time performance (OTP), but it will come at a slightly higher cost.

Immigration queue time

3.70 The service quality regime has to date focused largely on the departing journey. Consideration may be given to looking at the arrivals journey. The two key arrivals processes for passengers are immigration and baggage collection with the former being a process to which all arriving passengers are subject and which therefore can attract considerable levels of attention in social and traditional media if the experience is deemed poor.

3.71 Immigration and border controls at Dublin Airport are fully maintained by the Irish Naturalisation and Immigration Service (INIS) of the department of Justice and Equality. Therefore, it is not practical for the airport to face service quality targets in relation to immigration.

3.72 While we are not directly responsible for this measure, we understand that satisfaction of arrival passengers is influenced by their immigration experience. We

therefore provide monthly reports to the Commission on the daily maximum immigration queue time for the various immigration zones at the airport.

3.73 The Commission has sought views on whether this queue time information should be made publicly available, but it is not clear to what extent this would improve passenger welfare.

3.74 Dublin Airport can partially influence the passenger immigration experience by providing adequate queue space and by enabling the use of automation such as e-gates. There are currently ten e-gates in operation in each of T1 and T2, and another five due to be installed in the transfer facility. As part of the Programme of Airport Campus Enhancement (PACE) suite of projects, immigration queue space in T1 will be increased from 480 Sqm to 1,200 Sqm. The next Capital Investment Programme will include a proposed option for further increases to immigration space.

3.75 Immigration is clearly a big issue for airport stakeholders and plays an important role in shaping arrival passengers' first impression of Ireland. Furthermore, we understand that immigration queuing is an 'acute' issue, i.e. delays happen at specific times of the day, which requires a flexible approach to resource planning. We agree that measurement and reporting of immigration queues makes sense for information purposes, but not for inclusion as a service quality measure, given that Dublin Airport is not directly responsible.

Wait time at check-in

3.76 As airlines have overall control over the check-in experience, Dublin Airport does not face a service quality target for this measure. However, our customer research shows that 'wait time at check-in' is one of the key drivers of passenger satisfaction. Dublin Airport indirectly impacts on the check-in experience by providing sufficient check-in desks, queuing space and by enabling the use of automation, such as self-service kiosks. Examples include Common User Self Service Kiosks in PACE with more to be proposed in the next Capital Investment Programme i.e. Islands 1 and 2 in Terminal 1 in addition to a Terminal 2 check in project.

3.77 Given the importance of check-in for customer welfare, we are seeking feedback on how the existing service quality regime could be amended to improve performance by airlines in this area.

3.78 As stated by the Commission in its April 2018 Issues Paper, airlines in Gatwick airport must ensure that wait time at check-in is less than 30 minutes in 95% of cases. Where a breach occurs, airlines risk a 1% reduction in their monthly quality of service

rebates from Gatwick. We believe that in advance of such a measure being considered, better data should be made available in relation to the typical and/or maximum time it takes for passengers to check-in at Dublin Airport. We therefore welcome feedback on how airlines could measure and report such data, in the interests of transparency and public information sharing.

Additional baggage measures

3.79 As Dublin Airport does not control baggage delivery, we do not believe that new service quality measures should be introduced for 'wait time for delivery of bag to ground handler' or 'wait time for delivery of bag to passenger'. Service level agreements are already in place between ground handlers and airlines. Data on performance of outbound and inbound baggage delivery are already available, e.g. data are available for 'block to first bag' and 'block to last bag' for T1 and T2. Given the impact that baggage delivery times has on overall passenger experience, we welcome views on whether we should make performance data on baggage delivery publicly available.

3.80 The corresponding measure for inbound baggage is known as the 'pick rate' which measure the performance of ground handlers. We collect data on the pick rate for T2. However, the T1 baggage system does not have the required hardware or data touch points.

Passenger facing equipment and seating

3.81 Availability of passenger facing equipment and seating in the terminal or at departure gates does not form part of the existing quality of service regime. However, as 'comfort of waiting / departure area' is one of the ACI measures we are assessed against, this score partially reflects availability of seating.

3.82 Dublin Airport is committed to delivering a high-quality passenger experience for these elements of the passenger journey. In relation to passenger facing equipment (such as escalators, lifts and travellator) we have our own internal KPI of just over 98% uptime on these measures, with overall performance of 99.3% for the eight months from January to August 2018 and 98.1% for the month of August 2018.

Walking distance

3.83 Walking distance within the terminal is more appropriately measure as a subjective measure, given that the actual distance is fixed, whereas the passenger experience can be influenced by use of travellators and appealing visual imagery along the way.

Airline facing, airfield and environment

3.84 Dublin Airport does not face any targets in relation to the following:

- Airline facing (availability of airbridges, doors, core lifts, travellators, car park bussing);
- Airfield (bussing times, taxi in / out, FEGP, AVDGS, availability of stands, departure punctuality, asset utilisation);
- Environmental activities (taxiing and on-stand emissions, aircraft waste facilities, aircraft de-icing fluid use, noise)

3.85 It is not clear to what extent the above activities could or should be incorporated into a service quality regime. We note that the above airline facing, airfield and environmental measures are generally not included in the service quality regimes in place at other airports. Not all airlines make use of airbridges; and additional stands (contact and remote) will be proposed in the next Capital Investment Programme.

3.86 While airfield measures are important inputs to the overall passenger experience, there are several considerations that suggest they are not appropriate as service quality measures, for example:

- Flow rates on the runway are controlled by ATC, not Dublin Airport;
- Towing volumes are not directly relevant to passenger welfare;
- Appropriate taxi-in / taxi-out times can mean different things to different airlines,
- Stand availability is being addressed via the capital investment programme.

3.87 Dublin Airport considers that punctuality of arrival and departure flights is an important consideration of passengers. There are many factors that impact on flight punctuality, however, many of these factors are outside the control of Dublin Airport. For example, air traffic control issues in Ireland and abroad, strikes by airline cabin crew and pilots, and extreme weather events have all impacted on flight punctuality at Dublin Airport during 2018. For our part we are committed to having the requisite infrastructure in place (e.g. runway, stands, air-bridges, etc.) and

ensuring that passengers are processed in an efficient manner (e.g. that persons with reduced mobility are processed in a timely fashion) as well as a myriad of other operational, safety and capacity management considerations. We therefore believe it would be impractical to target Dublin Airport with a measure on flight punctuality. Due to the importance of OTP we will continue to measure and report the OTP scores going forward.

3.88 FEGP is currently in operation on Pier 4 and is used by several airlines operating on that Pier. FEGP is also in operation on one stand on Pier 3 and is currently being installed on the remainder of Pier 3 and on part of Pier 1 via the current Programme for Accelerated Campus Enhancement (PACE). FEGP roll-out across the remainder of the campus (contact & highly utilised remote stands) is proposed in CIP 2020-2024 which includes 33 Stands on Pier 1 (areas not covered by PACE), Pier 2 and Apron 5G such that all stands east of runway 16-34 will have FEGP installed. FEGP complies with the Alternative Fuels Infrastructure Directive 2014-94-EU and we are proposing to design the structure of charges in a way that encourages efficient use of power. Switching away from the existing mobile (diesel powered) GPU units will also result in environmental benefits.

3.89 We are installing Advance Visual Docking Guidance System (A-VDGS) in Dublin Airport. A-VDGS units will be rolled out a on phased basis up to December 2019. In November 2018 we connected four existing A-VDGS units on Pier 3 back to our Airport Operating System (AOS). By the end of January 2019, we aim to have 14 A-VDGS screens installed and connected back to AOS, (nine on the South Apron, one on Pier 4 and four on Pier 3). A-VDGS displays live operational data to pilots and other ground staff and will assist with the overall airside efficiency and safety at Dublin Airport.

3.5 Key Considerations

3.90 The existing service quality regime was implemented by the Commission in 2014 without consideration for the extraordinary growth in passengers. It is questionable whether the airport should be penalised financially for certain bottlenecks that the airport is actively addressing via a capital investment programme in response to this passenger growth.

Targets set by the Commission

3.91 In 2014 the Commission set Dublin Airport a target of 24.8m passenger in 2019. When setting the regulatory building blocks (including the passenger target) the commission was mindful of the service quality targets and set the targets to 'maintain' the service quality level in existence at that time. However, by early 2018, the rolling twelve-month passenger volumes crossed 30 million for the first time, elevating Dublin Airport into a new category of top tier, major international airports. Not only have we been able to accommodate this extraordinary level of growth, we have done so while maintaining a high standard of service quality. Had the Commission envisaged the surge in passengers which materialised, it is arguable whether the targets set in 2014 would have been set as high.

3.92 Continuing to meet growth is placing strains on several of the QoS measures, in particular the security queue in T1 and several of the subjective metrics captured by the ACI survey. Going forward, Dublin Airport will face significant challenges in processing continued growth in passengers while maintaining current service quality levels.

3.93 While the PACE projects (€269m) will address a number of constraints in the short term, Dublin Airport will operate at near full capacity until the proposed CIP programme is rolled out throughout the 2020+ Determination period. Given the significant volume and complexity of the projects in the pipeline, we believe that the ACI targets should be less onerous to reflect what is realistically achievably without excessive cost.

Revenue at risk

3.94 Firstly, financial penalties for reductions in service quality should not be considered a panacea, given that Dublin Airport is accommodating increasingly numbers of passengers in a more constrained environment.

3.95 We consider that having 4.5% of annual revenue at risk from the service quality regime is excessive. Considering there is no reward for outperforming SQM targets, the risk to Dublin Airport is primarily on the downside, whereas several other airports have an opportunity for financial reward for exceeding their SQMs.

3.96 Of the twelve measures in the current service quality regime, the security queue is the most significant from a financial penalty perspective, accounting for 1.5% of the 4.5% total revenue at risk. Dublin Airport considers that having 1/3rd of the total risk weighted towards the security queue is excessive, and not in line with the approach

taken in other airports (e.g. 1/4th at Gatwick, 1/7th at Heathrow, and no financial penalty at Rome Fiumicino or Brussels airports). We employ industry best practice in measuring and reporting the security queue data, which should be considered when setting the target (i.e. many airports still rely on a manual recording system).

3.97 1% of annual revenue is at risk for the two baggage measures: outbound (0.75%) and inbound (0.25%). The outbound baggage weighting was set higher by the Commission to reflect the greater impact this measure has on the punctual operation of flights. However, it may be the case that passengers attach a more equal importance to the operation of the outbound and inbound baggage systems at Dublin Airport, which could represent either the arrival or departure leg of their journey.

Objective and subjective measures

3.98 At present, the balance of risk between objective (security and baggage measures) and subjective (ACI scores) is weighted 44% and 56% respectively. Dublin Airport notes that submissions by Aer Lingus, Ryanair and IATA in response to the Commission's Issues Paper all advocated for more focus to be placed on objective measures. From the key driver analysis conducted by Dublin Airport, we know that apart from security queue and wait time at check-in, the remaining key drivers of passenger satisfaction are: cleanliness of toilets and washrooms, ease of way-finding, Wi-Fi quality, standard of décor / comfort of departure gate seating and food & beverage offering at departure gates. Therefore, it appears that the balance of risk is currently appropriate and better aligns with passenger requirements.

Symmetry of financial incentives

3.99 Under the current service quality regime, Dublin Airport faces financial penalties for not meeting targets, but does not benefit from any bonus if the targets are exceeded. This is clearly not an optimum approach and goes entirely against the spirit of incentive-based regulation. Table 4 summarises the regimes in place at other comparator airports.

TABLE 3.4 FINANCIAL PENALTIES AND REWARDS AT COMPARATOR AIRPORTS

Airport	Financial penalties (underperformance)	Financial rewards (outperformance)	Maximum revenue adjustment
AdP	Yes	Yes (for excellence indicators only)	-
AdR	Yes	Yes	+/-1%
Aena	Yes	Yes	+2% to -5%
ANA	Yes	No	-2.50%
Brussels	No	No	n/a
Dublin	Yes	No	-4.50%
Heathrow	Yes	Yes	+1.44% to -7%

3.100 As can be seen in table 4, Aeroports de Paris (AdP) Rome–Fiumicino International Airport, AENA and Heathrow airports all benefit from financial rewards for outperforming their service quality targets. While AENA faces a 5% financial penalty for underperformance, it could benefit from a 2% reward for outperformance, resulting in a net downside risk of 3%. Brussels Airport doesn't face any financial penalties or rewards. Apart from Dublin Airport, only Aeroporto de Portugal (ANA) has penalties without rewards.

3.101 While Heathrow (+1.44 to -7%) faces higher financial risk than Dublin Airport, most other comparable airports face lower risk. Gatwick's service levels are agreed with airlines in a set of "Commitments", which establishes quality standards for those services.

3.102 IATA's submission to the Commission's Issues Paper expressed the view that only financial penalties should apply, as outperformance could imply unnecessary expensive investments, with a high possibility that the costs are passed on to users. This is unlikely to happen given that Opex targets are set at the start of the regulatory period and incurring additional Opex to beat SQM's would not be recoverable.

3.103 Apart from direct financial benefits (in the form of additions to the price cap) another option would be for Dublin Airport to accrue credits from significant and consistent outperformance of the service quality targets, which could be used to offset future penalties should they arise.

3.104 AdP sets financial rewards for its three 'excellence' indicators only. A similar approach could be used for Dublin Airport whereby rewards are allowed for

outperformance of the key driver measures, or for outperformance of the objectively measured measures (security queue and baggage systems).

Link with Operating Expenditure

3.105 The 2017 DTTAS statement on airport charges stated that "the overriding strategic objective of the economic regulation of airport charges in Ireland is to ensure that current and future airport customers are presented with choice, value and quality services which also meet the highest international safety and security standards".

3.106 Given the unanticipated growth in passenger numbers at Dublin Airport, the level of operating expenditure (Opex) required to maintain safety and quality of service standards at the existing level was not fully appreciated in 2014.

3.107 While we have managed to meet many of the service quality targets during the first four years of this Determination, there have been an increased number of breaches that have resulted in significant financial penalties. It is plausible that there would have been a higher number of breaches, had it not been for a significant increase in operational expenditure arising from security staff, cleaners, customer service agents, etc.

3.108 In other words, we have incurred significant costs to ensure that service quality is maintained and the key areas to invest in have been identified via our continuous programme of strategic planning – this necessary increase in Opex has not been reflected in the Commission's targets set in 2014. This targeted response by Dublin Airport is guided by feedback we receive from the 28,000 passenger interviews and 40+ focus groups we run each year.

3.109 Other airports are spending vast amounts of Capex and Opex on improving their service quality and have consequently seen their ACI rankings improve, and are above Dublin Airport in the rankings, demonstrating the link between Capex / Opex expenditure and service quality. These include:

- Rome Fiumicino - €12bn transformation to enhance end-to-end travel experience, which includes a terminal revitalisation programme to increase the level of service and comfort for passengers in existing terminals ;
- Sheremetyevo Mosco - €12bn investment to become one of the largest passenger and cargo hubs in the world and has a range of initiatives in plan to improve passenger experience and increase capacity.

- Heathrow London - has invested over £11 billion since 2007 improving passenger experience. With two new terminals and other significant improvements, it now has smoother arrivals, quicker departures and better connections.
- Oslo - five-year expansion of Oslo Airport is now complete, almost doubling the terminal's footprint and increased annual passenger capacity to 32 million. The developments feature 12 new security gates, 34 new check-in counters, 11 new gates, expanded baggage handling facilities and a number of new shops and restaurants.

Passenger advisory forum

3.110 The Commission published a 'Decision on Passenger Advisory Group and Passenger Engagement Guidelines in Regulatory Decision Making for Dublin Airport' in September 2018. The Commission has decided to trial three new mechanisms that are intended to improve passenger engagement in decisions they make in relation to Dublin Airport.

- Establishment of a Passenger Advisory Group on a trial basis
- The Commission to issue Guidelines to assist stakeholders who wish to submit evidence based on passenger engagement
- The Commission to better inform passengers by publishing summaries of relevant documents in a more accessible format

3.111 The PAG held its first meeting in November 2018 which comprised of a range of organisations aimed at representing the diversity of passengers at Dublin Airport, including: Age Action, European Consumer Centre, IBEC, Chambers Ireland, Failte Ireland, Irish Society for Autism, and the National Disability Authority. The Commission expects to hold five meetings in total with the group to examine how passenger priorities are addressed by proposals on quality of service and capital investment projects. Dublin Airport will attend the next meeting in February 2019 to discuss quality of service measures. The theme for the next meeting is the proposal from Dublin Airport on infrastructure projects such as pier extensions, security and immigration facilities, IT projects, lifts, escalators, travellators and airbridges.

3.112 Dublin Airport is already actively involved in eliciting passenger views to inform our CIP 2020+ programme. For example, the 'Blending Passenger Experience with Infrastructure' initiative sought views from passengers, representing different passenger profiles (personas), to provide feedback via independent experience experts to ensure that we are considering all passenger needs in the development of various infrastructure scenarios across the Departures, Transfer and Arrival

passenger journeys. Our personas cover the elderly (mobility issues), a mother travelling with two children, a lady with sight impairment, and a business passenger.

4. Traffic Performance and Projected Passengers

4.1 Introduction

4.1 The global and local macroeconomic environment has dramatically improved since the publication of the current regulatory determination in October 2014, which has fuelled a post-recessionary upturn in passenger demand. Owing to our continued partnerships with airport stakeholders, annual traffic at Dublin Airport has accelerated from 18.4 million passengers in 2010, to a record level of 29.6 million in 2017. In early 2018, the rolling twelve-month passenger volumes crossed 30 million for the first time, elevating Dublin Airport into a new category of top tier, major international airports (which includes London Heathrow, London Gatwick, Amsterdam and Paris CDG). Dublin is now the eleventh largest airport in the European Union (by passenger volumes).

4.2 A fundamental component of Dublin Airport's regulatory proposition is the Capital Investment Programme (CIP) required to accommodate current and future demands on the airport. The volume and composition of future airport activity is a critically important input to the development plan.

4.3 Accurately forecasting demand is a challenging, multi-faceted exercise. The 2009 Determination failed to appreciate the full scale of the recession to follow, while the 2014 Determination struggled to forecast the scale of the economic recovery underway. Economic growth has long been recognised as a key driver of passenger demand. However, the Irish economy has experienced a relatively volatile trajectory over the past decade, thus hampering the accurate mapping of economic activity to short-term passenger demand.

4.4 In previous determinations, the Commission assigned passenger volume risk to Dublin Airport by setting the price cap at a per passenger level. We believe this approach remains appropriate, given that Dublin Airport is best placed to adjust to changing levels of demand, and because it incentivises Dublin Airport to increase passenger traffic.

4.5 To inform stakeholder engagement, Dublin Airport issued a consultation document on 7 September 2018 outlining the following over-arching future traffic assumptions:

a) Demand environment to remain positive in the short to medium term

The global and local macroeconomic trends remain positive and should continue to support increased levels of passenger demand. Passenger numbers and aircraft

movements are expected to continue to grow over the next regulatory period and beyond. This is consistent with recent trends, industry forecasts and airline aircraft orders.

b) Normalised traffic growth

A sustained period of moderated but stable demand growth is expected. Current growth rates have subsided to mid-single digit percentages and are expected to reduce further in the medium term, across the larger European airports.

c) Broadening of the customer base

The composition and mix of airport traffic will continue to broaden. We anticipate further new entrants across a range of service offerings; from new, intercontinental five-star airlines, to additional short-haul low cost services. Transfer traffic is expected to grow and account for a larger percentage of overall airport traffic (currently 5.5%). A continuation of expansion on the North Atlantic is expected, as well as increased demands for US Preclearance. Trends towards larger aircraft and higher load factors continue to drive passenger growth above aircraft movement growth, albeit load factors are currently at record levels, with limited scope to increase further.

d) Significant downside risks emerging

34% of traffic at Dublin Airport is between Ireland and the UK (over 11 million passengers in 2017). No growth has occurred in this key market for over two years. A hard Brexit could result in a sustained traffic decline in this market. Overall airport growth in 2015 and 2016 was delivered against a backdrop of oil prices at less than $50 per barrel (low of $29 was recorded in early 2016), but prices surpassed $75 during 2018. Aircraft technology will continue to progress, with enhanced performance to operate longer distances. This trend will inevitably result in the decline of the transit business (technical fuel stops). Finally, capacity headroom at the airport over the coming years will be significantly less than during the preceding period. Runway capacity will remain constrained until 2022, when the new runway is expected to be operational, albeit planning restrictions could limit its full potential. Lack of contact stand availability is a significant issue which will be addressed in the next development plan.

4.2 Review of Traffic Dynamics

4.6 Several specific changes to the dynamics and composition of traffic at Dublin Airport have emerged since publication of the 2014 Determination. While most of these changes, listed below, have positively contributed to passenger and aircraft movement growth, they have also placed a strain on certain modules of airport infrastructure during peak periods.

Changes in airline operating models

4.7 Ryanair's enhanced focus on customer service and Aer Lingus' change in ownership structure (the two largest carriers at Dublin Airport) will impact on the future business plans and facility requirements of both airlines. For example, Ryanair has signalled an interest to start transferring passengers at Dublin, while Aer Lingus has accelerated its long-haul expansion plans, by almost doubling its long-haul fleet since 2014. Undoubtedly, the growth of narrow-body, next generation aircraft operating transatlantic routes is a significant development in the market.

4.8 There has also been a marked increase in the number of based aircraft at Dublin Airport since 2014, which is driving demand for overnight aircraft parking stands and first-wave departure slots. Ryanair has increased its first wave departures from 19 aircraft in 2014 to 31 aircraft in 2018, while Aer Lingus has increased its morning narrow-body departures from 24 to 28 over the same period.

New players in the market: changing growth dynamics

4.9 The number of scheduled airlines at Dublin Airport has increased from 29 in 2014 to 46 in 2018.

4.10 With the arrival of Hainan Airlines and Cathay Pacific in Summer 2018, Dublin Airport now welcomes five of the world's 5-star airlines (out of a total of ten). These premium carriers require enhanced airport facilities such as business class lounges, dual-airbridges, fast-track security and chauffeur car parking.

4.11 Ryanair and Aer Lingus generated up to 80% of the airport's growth in 2015 and 2016, however in 2017 and 2018, almost two thirds of the airport's growth came from 'other airlines'.

Growth in long-haul and transfer traffic

4.12 Long-haul traffic accounted for 15% of overall traffic in 2017, up from 12% in 2014. There has been an increase from 43 widebody movements on a typical busy day in

2014, to 69 per day in 2018 (for 2018, widebody movements on Pier 3 at Dublin increased by 35%).

4.13 Long-haul flights enhance Dublin's global connectivity, but widebody aircraft place heavier demands on the airport's infrastructure; i.e. generally consume two narrow-body parking stands, ground-times of over two hours, require wider Code E taxiways and will require a large number of ground servicing vehicles and equipment.

4.14 Transfer passenger volumes have doubled since 2014, increasing from 3% to 5.5% market share. In 2018, connecting volumes crossed two million passengers for the first time. The vast majority of connections at Dublin Airport are from North America to Europe (and vice versa).

4.15 The West-to-East transfer flows typically occur early in the morning. Aircraft arriving off the Atlantic normally require pier served contact stands, which by extension displace certain narrow-body/short-haul flights to remote and satellite aprons. The corresponding East-to-West connections occur daily from 0900 to 1500. Longer-haul flights from the US West Coast, such as San Francisco, Los Angeles and Seattle arrive in Dublin from 1100 onwards, with onward connections to Europe and the UK taking place in the afternoon.

Market analysis

4.16 Dublin's transatlantic traffic has grown by over 50% since 2014 and Dublin is now the sixth largest airport in Europe for traffic to North America (ahead of Madrid, Rome, Barcelona, Milan and Munich).

4.17 Core European destinations have seen an increase in flight frequency and capacity. The strong resurgence in Irish outbound leisure demand has resulted in a 38% increase in passengers travelling to Southern Europe/ Mediterranean destinations since 2014. The market size in 2017 was over six million passengers.

4.18 Conversely, the UK market was flat in 2017 and was similar in 2018. Leisure traffic flows in this market are particularly sensitive to currency fluctuations. The UK is by far Dublin's largest volume market and accounts for over one in three passenger journeys. Traffic changes in this key market will have a critical impact on overall passenger numbers at Dublin Airport

4.3 Dublin Airport's Strategy

National aviation policy

4.19 In considering our strategic targets, Dublin Airport is guided by the National Aviation Policy (NAP), which was published by the Department for Transport, Tourism and Sport (DTTAS) in 2015. Among the goals outlined in the NAP are:

- creating conditions to encourage the development of new routes and services, particularly to new and emerging markets;
- ensuring a high level of competition among airlines operating in the Irish market; and
- optimising the operation of the Irish airport network to ensure maximum connectivity to the rest of the world.

4.20 In addition, the NAP specifically references the opportunity to develop Dublin Airport as a vibrant secondary hub, competing effectively with the UK and other European airports. A hub combines local passengers with transfer passengers enabling airlines to operate services to more destinations and more frequently than could be supported by local demand alone. Irish aviation policy states that the airport should be developed into a secondary hub over a period of time and that this will involve the construction of a second runway as well as other infrastructure developments.

4.21 The importance of the United States Preclearance facility is a key contributory factor to the growth in the transatlantic connecting business over recent years. However, with several European airports currently in negotiations with the United States authorities for the provision of CBP facilities, connecting traffic at Dublin Airport will undoubtedly face greater competition in the years ahead.

Transfer targets

4.22 The number of transfer passengers at Dublin Airport doubled from 800,000 to 1.6 million between 2014 and 2017. Dublin Airport's 2025 Strategy has set the following traffic targets:

- 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
- Maximise the scale and usage of the United States CBP facilit

North American market

4.23 Dublin Airport's geographical location on the outer west coast of Europe offers a compelling strategic advantage over other Continental European hubs for one stop connections to/from North America. Ireland acts as a natural gateway between the two land masses, with populations of between four and five hundred million people on either side of the ocean.

4.24 In 2013, Dublin served 11 destinations in North America. This has increased to 21 destinations in 2018, with four new locations on the West coast (Vancouver, Seattle, Los Angeles and San Francisco).

4.25 In terms of potential new destinations, Reykjavik (a significant competitor to Dublin in the transatlantic connecting market) offers 13 North American destinations that are currently not served from Dublin (Portland, Denver, Minneapolis, Pittsburgh, Baltimore-Washington, Edmonton, Halifax, Tampa, Cleveland, Detroit, Cincinnati, Kansas and Saint Louis). Other potential new destinations in North America could include Calgary, Las Vegas, New Orleans, San Diego and Phoenix.

Expansion of Inter-continental destinations

4.26 Historically, the Dublin Airport long-haul network was concentrated on North America. In recent years, connections have been added to the four major Middle Eastern hubs; Istanbul, Dubai, Abu Dhabi and Doha. In 2018, the first Asian services launched to Beijing and Hong Kong. In terms of global coverage, direct services between Dublin and the following regions remain underdeveloped and could be focus areas for new route development in the coming years;

- Top five Chinese cities, Korea, Japan, Thailand and Malaysia
- Indian Sub-Continent
- Mexico, South/Latin America and the Caribbean
- Sub-Saharan Africa

4.27 Many of the above destinations are currently served from Manchester and London Gatwick airports, which are peer competitors to Dublin for new intercontinental services.

Consumer choice and competition

4.28 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% (reducing further in 2018) 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.

4.29 Obviously, some of the thinner, lower frequency routes may remain in service with one operator, but each of the top ten volume routes now have at least two airlines offering services and in many cases three or more carriers; i.e. Barcelona (3 airlines), Paris (4 airlines), New York and London (5 airlines).

4.4 Traffic Risks

4.30 The medium-term outlook for demand remains positive. The demand environment appears healthy and passenger growth should continue at Dublin Airport, but with a maturity towards the more normalised, longer-term trend.

4.31 Unfortunately, air traffic has been volatile over the past decade and it would be prudent to briefly outline the potential downside risks to passenger traffic over the coming years.

Brexit

4.32 34% of Dublin Airport's traffic is between Ireland and the UK. 5% of annual passengers originate in Northern Ireland. It has been suggested that the implications of Brexit are accounted for in the various GDP projections, however, aviation is without doubt, one of the most exposed industries to the consequences of a hard Brexit. The vote by the UK to leave the EU in 2016, has resulted in no passenger growth for a sustained period of over two years, despite robust economic growth in both economies.

4.33 The risks presented by Brexit to Dublin Airport's passenger traffic are specifically;

- **Depreciation of sterling**. Sterling has depreciated against the Euro by circa 15% since the Brexit referendum in June 2016. This has negatively impacted on the spending power of UK tourists in Ireland. Visitors from Great Britain declined by 5% in 2017.
- **Business traffic and trade**. The impacts of Brexit on the UK economy are generally perceived as negative. The potential for the UK to exit the EU Customs Union could result in depressed business traffic between the UK and Ireland.
- **Travel restrictions and disruption**. Any regulatory divergence between the UK and EU on aviation standards may impact on check in, customs, immigration and security procedures at Dublin Airport. In a 'no deal' scenario, the trade relationship between the EU/UK could default to World Trade Organisation (WTO) rules. However, WTO rules do not provide any fall back for aviation, which could result in

temporary flight disruption between the UK and Ireland. Uncertainty regarding the eventual outcome could either restrict or divert travel decisions away from the UK.

Airport capacity constraints

4.34 The dramatic growth delivered between 2014 – 2018 was against a backdrop of capacity headroom across the principal airport processors. The main runway is now operating at its declared capacity for much of the summer period and although initiatives are currently underway to improve runway productivity, inevitably, over the short-term, certain demand or new business will be restricted to unviable times, which may require postponement until the new runway capacity is fully online in 2022.

4.35 The morning peak departure period of 0600 – 0800 is effectively full all year-round, with limited opportunity for airlines to depart additional short-haul aircraft at their preferred times. For these reasons, the assumption of unconstrained growth being used as the traffic target for the first half of the next determination is impractical and a constraining adjustment should be developed to refine the growth targets.

Transfer and Transit traffic

4.36 Dublin recorded circa 250,000 transit passengers in 2018. As previously explained, this traffic is expected to diminish over the coming years. The transfer market is also vulnerable in several ways:

- Direct flights between Europe and North America are at a record high, with increasing numbers of European airports gaining direct access to North American cities. Competitive direct services are a distinct threat to one-stop transfers, which Dublin is attempting to grow.
- Transfer flows are relatively mobile and can freely move with relative ease to other airports. The loyalty of a transfer passenger to a particular hub is limited and price/elapsed time are usually the key decision drivers for which airport to transfer at.
- The US authorities concluded an agreement with Stockholm Airport in November 2016 to provide a US Preclearance facility in the future. Amsterdam, Brussels and Manchester Airports have all previously expressed an interest in developing US Preclearance facilities. Similar facilities would devalue Dublin's current unique selling proposition and undoubtedly, shift a portion of European originating volumes towards other hubs.

Jet fuel prices

4.37 Fuel is a significant cost component of an airline ticket price (up to 30%). If the recent elevation of crude oil prices returns, airlines may be pressured to start recovering the additional production costs through increased pricing. Higher ticket prices, in the first instance, will challenge price sensitive demand and may supress the demand for discretionary trips.

Geopolitical risks and rise in protectionism

4.38 Geopolitical risks have elevated since the 2014 Determination. Increased tensions between the US and Iran, instability in certain Middle East/Gulf states, rising populist sentiment in Europe and emerging trade conflicts have the potential to significantly suppress the demand for flights to certain regions, as discretionary travel is effectively postponed for a period of time.

Maturity of load factors

4.39 The average annual load factor is plateauing at 83%. For much of the summer months, many routes operate with 90%+ load factors, which is effectively full utilisation. There is limited further scope to grow passenger numbers purely through load factors. Further growth will therefore need to be facilitated by additional movements and larger capacity aircraft, which places further pressure on the already constrained runway and aircraft parking stands.

Ability of airlines to switch airports

4.40 Airlines have immense flexibility to choose where aircraft should be deployed or redeployed at relatively short notice. The further trend towards greater airline consolidation, joint ventures and groupings in Europe, could pose a threat to the negotiating power of airports and result in the consolidation of services on specific routes. Aircraft switching and consolidating at bases is intensifying, which is a specific risk to passenger growth at Dublin, as over sixty short-haul aircraft are currently based at the airport[4].

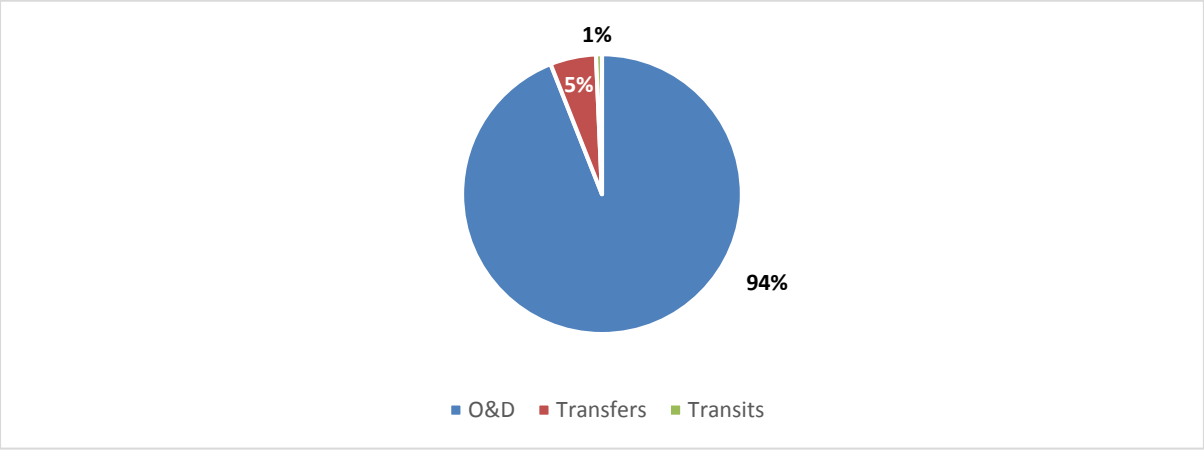
[4] In its regard it should be noted that the Sunday Independent published a leaked internal Ryanair memo suggesting the airline was considering cost cuts involving seasonal bases at some airports and slowing down the growth in its fleet of aircraft. daa is also aware on a confidential basis that in January 2019, Norwegian Air was forced to raise €300m to finance its current operations with therefore its future looking increasingly precarious.

4.5 Dublin Airport's Forecasting Model

4.41 Dublin Airport divides passenger traffic into three main categories and forecasts each category separately. The three categories are:

1. Origin and Destination (O&D) traffic
2. Transfer traffic
3. Transit traffic

FIGURE 4.1 DUBLIN AIRPORT TRAFFIC BY CATEGORY (2017)



O&D

4.42 O&D traffic is passengers whose origin airport or destination airport is Dublin. In 2017, 94% of traffic at Dublin Airport was O&D, about half of which are Irish (including Northern Ireland) originators (i.e. residents) and half are foreign residents with Dublin as their destination. O&D traffic flows are significantly influenced by the strength of a national economy, particularly for traffic originating in that market.

Transfers

4.43 A transfer passenger arrives into Dublin Airport on a flight from another airport ('airport of origin') and then departs Dublin as a passenger on another flight with:

- A different flight number to an airport or city other than the airport of origin or city of origin, provided that the scheduled time of departure of the second flight is not more than 12 hours after the scheduled time of arrival of the first flight.
- The same flight number, but the passenger does not remain on board the aircraft they arrived on and does not stay within a secure segregated area within the airport.

4.44 Hub airports with high percentages of transferring passengers tend to exhibit less of a correlation between the local economy and the growth in transfer traffic. If a high proportion of traffic is transferring at an airport (such as in Amsterdam), there is less of a reliance on O&D traffic to fill the aircraft. In recent years, the transatlantic fleet expansion of Aer Lingus has been heavily correlated with the growth in transfers. Aer Lingus has given some indication about how its transatlantic fleet is expected to develop over the next five years, which means that a reasonable transfer forecast can be derived from the planned expansion, rather than relying on a less correlated variable, such as the Irish economy.

Transits

4.45 A transit passenger arrives and departs on the same flight number and remains on board the same aircraft or stays in a secure segregated area within the airport. In 2014, transit traffic was modest in Dublin (below 10,000 passengers per annum). Ethiopian Airlines has since developed Dublin as a convenient location for technical fuel stops enroute from Africa to North America and in 2018, Ethiopian operated three transit routes through Dublin (Toronto, Washington and Chicago). There is little or no correlation between this traffic and the performance of the Irish economy. Aircraft performance is constantly improving, and it is highly probable that at some point in the short-medium term, these technical stops will be superseded by direct services.

Dublin Airports methodology for forecasting O&D traffic

4.46 Dublin Airport forecasts passenger traffic across 17 different markets:

1. London
2. Rest of UK
3. France
4. Germany
5. Benelux
6. Nordic countries
7. Austria / Switzerland
8. Italy
9. Spain
10. Portugal
11. Rest of Southern Europe / Mediterranean
12. Poland
13. Rest of Central Europe / Eastern Europe
14. USA
15. Rest of North America / South America

16. Middle East / Ethiopia
17. Asia Pacific

4.47 For each market, Dublin Airport undertakes regression analysis to establish the historical relationship between traffic and various macro and socio-economic variables, which is used to determine the variables (or combination of variables) that best explain and predict traffic growth. The driver variables used in the forecasting model currently include the following:

- Economic growth, per country (i.e. GDP).
- Jet fuel prices
- Inflation rates, per country
- Exchange rates
- Employment / unemployment rates, per country
- Population, per country
- National savings as a % of GDP, per country

4.48 Most of the above variables are available in the IMF's bi-annual World Economic Outlook, the exceptions being jet fuel prices, which are forecast by the US Federal Aviation Authority and exchange rates, which are forecast by various agencies, such as the Economist Intelligence Unit.

4.49 On Airfares, Dublin Airport does not have adequate information on historic fares and no information on future airfares. Thus, their impact on the passenger forecast is currently not captured. However, CAR noted in the Issues Paper that the effect of airfares on passenger volumes does not appear to be material, at least for small changes. Given that airport charges are a subcomponent of airfares, this is even less likely to have a material impact on passenger numbers.

4.50 This regression-based methodology is applied to 16 of the 17 markets. The Asia/Pacific market is calculated differently, as there is no historic traffic for this market up to the end of 2017. Instead, the actual traffic expected for this market is hardcoded into the model for 2018/2019 and then a similar growth rate is applied as derived from the "Middle East / Ethiopia" model.

4.51 The forecast model then combines the results from all 17 markets to produce a total annual passenger forecast for Dublin Airport.

Dublin Airport's methodology for forecasting transfer traffic

4.52 Dublin Airport's performance in this market is not driven by the performance of the Irish economy. The most accurate historic predictor of transfer volumes is Aer Lingus'

transatlantic growth, which is driven by its long-haul fleet expansion. Using historic trend data, this long-haul fleet expansion can be converted into a transfer passenger number. Beyond 2022, the longer-term transfer growth rate is set at the transatlantic O&D growth rate, as transfers are linked to the underlying performance of the transatlantic market.

Dublin Airport's methodology for forecasting transit traffic

4.53 Dublin Airport hardcodes the expected transit traffic for 2018 and 2019 into the model, based on airline fleet plans. Beyond these two years, traffic is not expected to grow, as there are limited opportunities in this market. With improving aircraft performances, there is a significant risk that this traffic may reduce or completely disappear.

4.6 Traffic Forecast

Information provided by airport users

4.54 Dublin Airport received three submissions in response to our Passenger Forecast Methodology and Market Outlook Consultation. A summary of the submissions, and our response to same, was circulated to airport users on 7 November 2018 (see appendix 1). In our response we advised that we were revising upwards our expected passenger traffic for 2018 from 32m to 32.4m. The actual outcome for 2018 looks to be just under 32.5m due to strong load factors and favourable weather conditions.

4.55 As part of the Airport Charges consultation process, we received airline scheduling information for 2019 from four airlines, which represented approx. 74% of traffic at Dublin Airport. While the scheduling info indicated some upside and downside potential for individual airlines, on balance it supported our existing outlook for 2019 traffic which remains at 32.4m.

Dublin Airport's Traffic forecast

4.56 The global and local macroeconomic trends remain positive and should drive increased levels of passenger demand over the medium-term. The current IMF estimates / projections for Irish GDP growth are; 4.7% in 2018, gradually reducing to 2.8% by 2022. The economic conditions in Ireland's key source markets are also positive, but not as robust. UK growth for 2018 is estimated at 1.4% growth in 2018 with a similar rate forecast over the medium term. Eurozone growth for 2018 is estimated at 2% for 2018, decreasing to 1.5% by 2022. The United States is anticipated to grow near to 3% in 2018, before reducing to 1.5% by 2022.

4.57 Figure 2 provides Dublin Airport's traffic forecast to 2024, which we are using as the basis for our Regulatory Proposition.

FIGURE 4.2 DUBLIN AIRPORT PASSENGER TRAFFIC FORECAST

4.58 Our forecast is for passengers to increase from 31.5m in 2018 to [redacted] in 2024, an increase of [redacted] passengers. We have already committed to providing the Commission with our 'latest expected' mid-2019, which will ensure the base year in 2020 is as accurate as possible, thereby lending itself to a more reliable reset compared to in 2015.

4.59 While passenger growth has been strong in recent years, this should be considered against the long-term trend. Figure 3 charts the twenty-year actual passenger movements at Dublin Airport.

FIGURE 4.3 LONG-TERM PASSENGER TRENDS AT DUBLIN AIRPORT

4.60 The trend-line highlights that passenger traffic moves in cycles, akin to economic cycles and demonstrates that recent growth is not necessarily the most accurate indicator of future growth. Periods or years can deviate above or below the long-term trend, as has occurred since 2005. The expectation is that passenger traffic will normalise towards the long-term trend over the coming years and the significant declines experienced post 2008 are not anticipated.

5. Operating Costs

5.1 Overview

5.1 Dublin Airport looks to provide a high-quality passenger experience at the airport while maintaining an efficient operating cost base.

5.2 In preparation for the next regulatory determination, Dublin Airport commissioned the firm of consultants Frontier Economics to carry out an independent bottom up assessment of the Dublin Airport cost base and to produce a forecast of efficient operating costs at Dublin Airport for the period 2020-2024. This Frontier Economics report is provided to the Commission as a confidential appendix to this regulatory proposition document.

5.3 Dublin Airport is presenting the Frontier Economics independent forecast as the recommended operating cost projections for the next regulatory determination period.

5.4 As part of its review of operating costs at Dublin Airport, Frontier Economics looked at Dublin Airport's cost performance during the current determination period, the key cost drivers and Dublin Airport's operational needs driving future operating expenditure.

5.5 Frontier Economics looked at daa operating expenditure broken down into eighteen categories, as defined in the 2014 Determination, this was to allow for a review of operating costs in their historical context.

FIGURE 5.1 OPERATING COST CATEGORIES

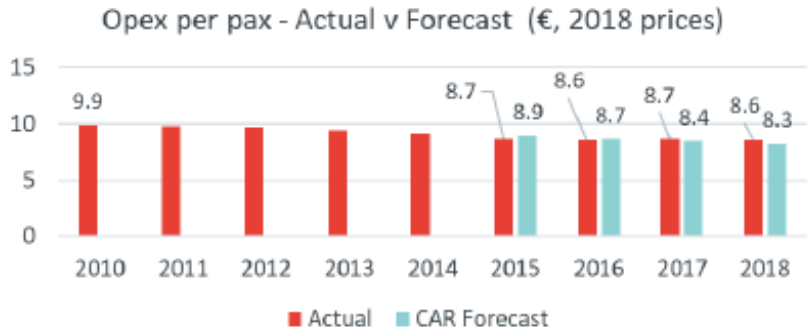
Ten categories are made of staff costs (own or contract staff) in following areas	Eight categories are made of non-pay costs (i.e. non-staff related) in the following areas
▪ Security ▪ Maintenance ▪ Central Functions ▪ Facilities & Cleaning ▪ Campus ▪ IT & Technology ▪ Retail staff ▪ Airside Operations ▪ Car Parks ▪ Capital projects	▪ Rent and rates ▪ Consultancy services ▪ Marketing and relating costs ▪ PRM ▪ Other staff costs ▪ Utilities ▪ Insurance ▪ Other (covering for example bank and credit card charges, security outside contractors and CAR costs) In the rest of this document and for the charts, we refer to this type of categories as 'nonpay category'.

5.6 Frontier Economics worked under the assumption that the next regulatory determination period would run from 2020-2024. Frontier Economics developed a transparent cost forecast model capturing the key cost drivers and assumptions on inputs and incorporating the known step changes in the Dublin Airport cost base anticipated for the next regulatory determination period. This model was used to produce the set of operating cost forecasts for Dublin Airport for the period 2020-2024 which are presented in this regulatory proposition.

5.2 Dublin Airport Cost Performance 2016-2018[5]

5.7 Dublin Airport has performed well on a per passenger basis where Dublin's operating cost per passenger has decreased by 16% since 2014.

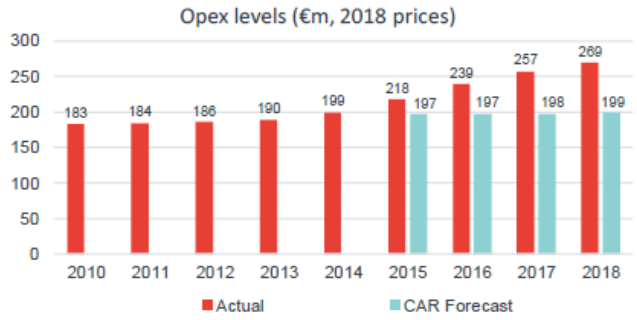
FIGURE 5.2 OPERATING COST PER PASSENGER 2010-2018



5.8 However, Dublin Airport's total annual operating costs have exceeded the Commission's operating expenditure allowances over the regulatory period 2015-2018 and this trend is expected to continue into 2019.

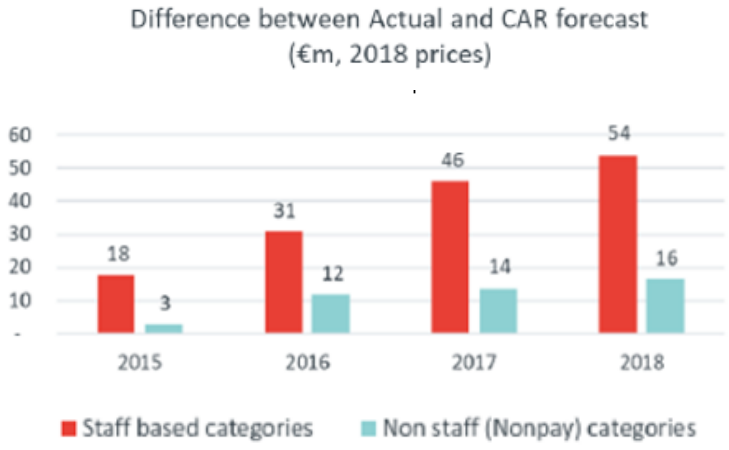
[5] Please note that all 2018 operating cost numbers used in this document were estimated numbers.

FIGURE 5.3 TOTAL OPERATING COSTS 2010-2018



5.9 The deviations from the Commission's total operating cost allowances largely relate to staff and outsourced costs incurred at Dublin Airport over the period 2015-2018.

FIGURE 5. DIFFERENCE BETWEEN ACTUAL COSTS AND REGULATORY ALLOWANCE



5.10 Dublin Airport believes that the divergence between actual operating outturn costs and the Commission's target allowances are driven by the following factors

- Commission's 2014 Elasticity Assumptions and Operating Cost Baseline
- Passenger Volume Growth
- Wage Inflation
- Compliance Changes
- New Infrastructure

5.3 Commission's 2014 Elasticity Assumptions

5.11 We are of the view that the operating cost elasticity assumptions used by the Commission in its 2014 Determination were understated on a category by category basis. These estimates resulted in an overall passenger volume elasticity assumption of 0.16 which was set at an unrealistically low level and which underestimated the impact of passenger volume increases on operating costs. The table below illustrates the contrast between the Commission/SDG operating cost elasticities used in the 2014 Determination and the elasticities underpinning the Dublin Airport 2014 operating cost forecast.

5.12 It should also be noted that the Commission's operating cost consultants SDG took an initial view of Dublin Airport's baseline 2014 operation costs that differed significantly from the view taken by the daa at that time. In addition, SDG assessed operating costs in 2014 on the basis of the costs likely to be incurred by an unconstrained airport operator. Therefore, this created a divergence between the Commission's forecast for operating costs and outturn operating costs at Dublin Airport over the current regulatory period.

FIGURE 5.4 ELASTICITY ASSUMPTIONS 2014

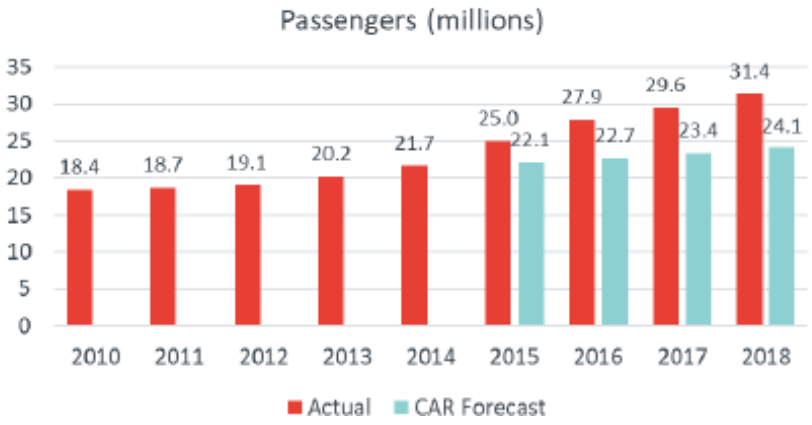
Cost Categories	CAR Elasticity	daa Elasticity
Security staff	0.3	0.6
Central Function staff		
Other staff costs		
Campus Services staff		
Airside operations staff		
IT & Technology		
Facilities & cleaning		0.2
Car Parks		
Retail	0.5	
Maintenance		0.2
Capital Projects		
Utilities	0.2	
Rent & rates		0.1
Marketing & related costs	1	1
Consultancy services		
Insurance		
Other	0.1	0.5
Passengers with Reduced Mobility	1	1
Pension Deficit Contribution		

5.4 Volume Growth

5.13 Over the period 2015-2018, Dublin Airport experienced a post-recessionary surge in passenger traffic demand. Double-digit traffic growth was delivered in the first two years of the current regulatory period (15.4% in 2015, 11.4% in 2016 and 6% in 2017 and 2018) followed by substantial growth in 2017 and 2018. The compound annual growth rate achieved to date in this regulatory period is nearly double that of the last regulatory determination period.

5.14 The Commission forecast passenger volumes at Dublin Airport to grow by 3% per annum from 22.1mppa in 2015 to 24.8mppa in 2019 however by 2017 passenger traffic had reached 29.6m mppa. In addition, passenger traffic at Dublin Airport reached 31.5m in 2018.

FIGURE 5.5 DUBLIN AIRPORT PASSENGER TRAFFIC



5.15 The increase in passenger traffic was particularly strong at Terminal 1

- Terminal 1 2014-2018 CAGR: 13.2%
- Terminal 2 2014-2018 CAGR: 4.7%

FIGURE 5.6 DUBLIN AIRPORT PASSENGER TRAFFIC BY TERMINAL

Note: T1 and T2 passenger numbers contain some transits, general aviation and miscellaneous.

5.16 Frontier Economics held that the period 2010 to 2014 represented a relatively "benign" period for Dublin Airport where capacity exceeded demand in the aftermath of the global financial crisis. As a consequence, when passenger numbers started to rise this had a limited impact on operating costs, but this was not

representative of the long run relationship between operating costs and traffic demand.

5.17 In contrast from 2014 onwards, when demand accelerated suddenly and unexpectedly, Frontier Economics found that neither the Commission nor Dublin Airport had correctly anticipated this pace of growth at the last regulatory review and it was apparent that the airport's plans and operational changes were not designed to accommodate such a sharp increase in traffic growth.

5.18 The significant increase in annual airport traffic (both in passenger and aircraft volumes) placed an elevated strain on existing airport infrastructure at Dublin Airport, with certain facilities nearing or already operating at maximum capacity throughout 2017 and going into 2018.

FIGURE 5.7 DUBLIN AIRPORT CAPACITY 2017

Facilities operating at:	Departure Processors	Arrival Processors
Maximum Capacity	• Airport Access Roadways • Car Parking • Aircraft Parking Stands • Apron & Taxiway System • Runway	• Runway • Apron & Taxiway System • Aircraft Parking Stands • Immigration (T1) • Car Parking • Airport Access Roadways
Emerging Capacity Constraints	• Kerbside Parking (T1) • Check-in (T2) • Baggage System (T1) • Transfer Facilities • US Preclearance • Retail/Wait for Gate/Food and Beverage • Departure Gates • Ground Equipment Parking	• Ground Equipment Parking • Baggage Reclaim (T1) • Kerbside Parking (T1)
Capacity Surplus Exists	• On Airport Roadways • Kerbside (T2) • Check-in (T1) • Baggage System (T2) • Central Security*	• Immigration(T2) • Baggage Reclaim (T2) • Arrivals Halls • Kerbside (T2) • On Airport Roadways

5.19 Despite these obvious challenges, Dublin Airport sought to cater for the unexpectedly higher traffic demand by applying short terms solutions to accommodate the higher than expected passenger traffic demand. In addition, due to the extra traffic demand, a number of extensions to the airport's 2014 CIP were introduced to enhance capacity, with further operating cost impacts.

5.20 Frontier Economics concluded that the sum of these effects has been to significantly strengthen the short run link between demand and operating costs at the airport.

5.21 It should be noted that Dublin Airport introduced these various short measures while striving to maintain efficiency and service standards where possible.

5.22 In this regard, Frontier Economics found that over the period 2015-2018, for Dublin Airport the passenger overall satisfaction with the airport experience rating has been increasing with an average score of 4.18 (5.1% better than the previous regulatory period). This overall satisfaction rating at Dublin Airport was consistently higher than the average rating of Dublin Airport's peers airports (average score of 3.92) over that same period.

FIGURE 5.8 ACI ASQ RESULTS

Overall Satisfaction

	Average (2010-2014)	Average (2015-2018Q1)	% change
Target	3.5	3.9	11.4%
Dublin	3.98	4.18	5.1%
Benchmark	3.83	3.92	2.6%

Source: ACI ASQ

5.23 However, it is apparent that maintaining and improving quality standards has become more challenging within the existing infrastructure as traffic grows. Short term operational solutions have been required to meet airport user requirements and to maintain quality of service. However, these short-term solutions have contributed to the increasing number of FTEs employed at Dublin Airport, which in turn have driven additional operating costs.

FIGURE 5. FTE NUMBERS

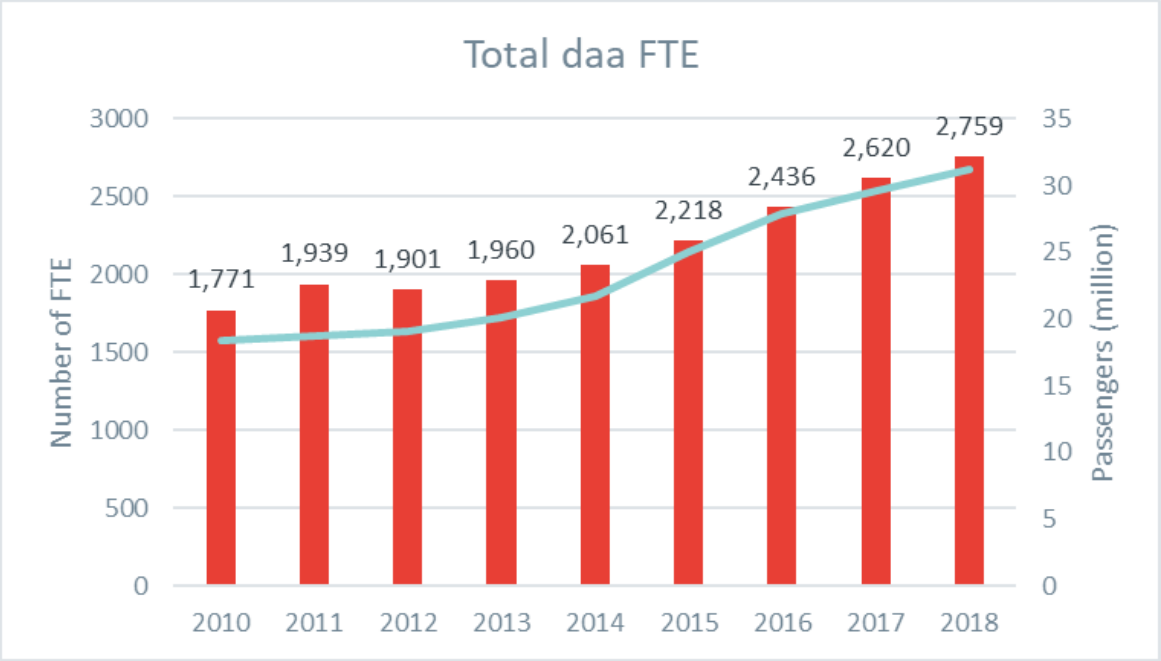
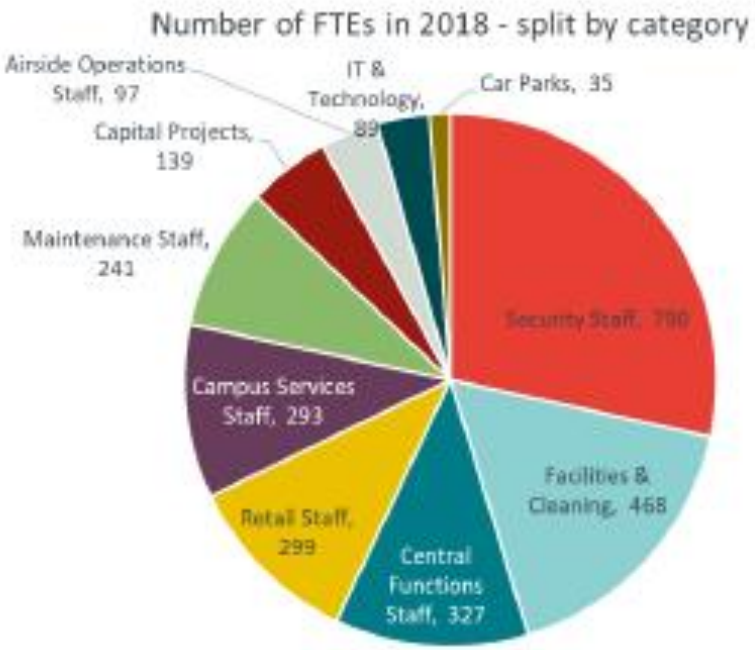


FIGURE 5.9 NUMBER OF FTES SPLIT BY CATEGORY 2018



5.5 Wage Inflation and Pricing Effects

5.24 Increasing costs at Dublin Airport were also been driven by a pricing effect where real wages grew at a faster rate than that anticipated by the Commission in its 2014 Determination.

5.25 Dublin Airport is operating in a highly unionised environment and this has impacted on the earning levels in the company in recent years where since 2015, Dublin Airport has been required to fulfil a number of obligations relating to pay restoration and national wage agreements.

5.26 These pay increases relate back to 2010 when during the financial crisis facing the Irish economy, unions and employees agreed to accept a temporary average pay cut of [redacted] on the basis that pay levels would be restored once a certain set of performance targets had been met by Dublin Airport. These targets were met by Dublin Airport in 2015 and pay restoration was made to [redacted] employees in 2016 resulting in an average pay increase of [redacted] .

5.27 Furthermore, a new wage claim was brought to the Labour Court by trade unions on behalf of its members employed by Dublin Airport, where this claim sought annual wage increases of 6% per annum and a resolution of a number of other cost related matters relating to previous wage agreements.

5.28 The Labour Court made a recommendation of a 2% per annum average wage increase for two years with effect from 1 July 2014 in return for a settlement of the claims made and the commitment to engagement between the company and unions in relation to a new management employee operating model.

5.29 A further pay deal was agreed between daa and employee representative unions which is impacting on company pay rates over the period 2017 to 2020. The table below shows that this daa agreement with unions was comparable to similar other multi-year agreements made with comparator companies and the unions.

TABLE 5.1 DAA UNION AGREEMENT 2017-2020

5.30 It should be noted that Aer Lingus and their employee union representatives have agreed a pay deal similar to that of the daa and its employee representative unions. This supports the view that Dublin Airport has secured an appropriate and competitive pay agreement in the current challenging labour market environment.

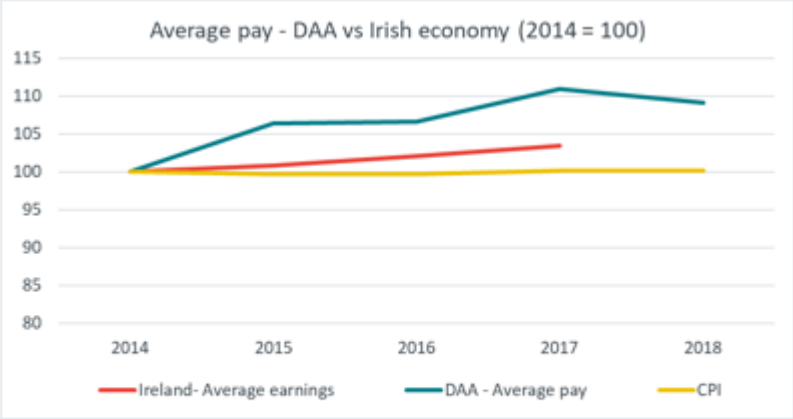
5.31 In addition to the increases in average wages for existing employees, Dublin Airport has faced the challenges of a tightening labour market and resulting wage inflation when seeking new employees in recent years. Labour supply shortages are emerging in a number of sectors in the economy and this is impacting on Dublin Airport's ability to recruit and retain staff at existing wage levels. This is a particularly prominent issue in areas such as IT and technology.

5.32 Dublin Airport has also faced the challenge in recent years of a change in the level of the skill requirement for its Security staff. Security staff at Dublin Airport now have to achieve a 'Screener Certification' which requires continuous ongoing training and assessment. Therefore, the overall skill level of the Dublin Airport workforce has gone up impacting on payroll costs.

5.33 It also should be noted that against the backdrop of rising wage inflation, Dublin Airport did succeed in driving some payroll efficiencies thorough natural attrition, restructuring and consolidation in certain operational areas.

5.34 A comparison of increases in Dublin Airport average basic pay with that of average basic wage increases in the Irish economy over the period 2014-2017 does show that the increase in Dublin Airport's average basic pay was slightly higher than the national average over that period.

FIGURE 5.10 AVERAGE PAY – DAA VERSUS IRISH ECONOMY



Ireland Average annual earning includes overtime and irregular earnings of full-time employees (CSO). DAA annual average pay = total minus PSRI and Pension to obtain a basic average pay inclusive of overtime and irregular earnings. These are thus inclusive of irregular payments like shift pay, but also performance related pay in the form of bonuses or incremental pay increases.

5.35 As previously outlined, there are a number of specific reasons for this including

- Pay increases driven by the company's cost recovery agreement and additional pay agreements
- The different and higher skill mix of the Dublin Airport workforce compared to the national average which is a factor in driving higher costs
- Cost pressure in key sectors at Dublin Airport primarily relating to the IT and technology sectors.

5.6 New Compliance Measures

5.36 Over the period 2015-2018, a number of new compliance measures were introduced which impacted on security operations at Dublin Airport.

5.37 A new regulation on procedures for explosives trace detection came into force in 2015. This requires that 10% of passengers must now be subject to a random explosives trace detection test and in addition if any passenger triggers an alert through the Walk-Through Detector they must now be subject to an additional explosives trace detection test. In regard to baggage, 10% of all bags must be subjected to an explosives trace detection test and all baggage selected for further inspection must undergo this explosives trace detection test.

5.38 Airport security unit officers are now subject to additional ongoing training requirements in order to maintain their mandatory screener certification.

5.39 These additional requirements have added to average passenger security processing rates and they have driven the need for higher security FTE numbers.

5.40 In addition, Dublin Airport was mandated by the Government in 2017 to provide Hold Baggage Screening at Dublin Airport going forward, this responsibility previously rested with the airlines operating at the airport. The financial impact of this change came into effect in 2018 driving up annual security costs.

5.41 All of these additional compliance measures have impacted on operating costs at Dublin Airport by an estimated €10m over the period 2015-2018.

5.7 New Infrastructure

5.42 As part of ongoing airport development and in response to the recent substantial increase in capacity demand, Dublin Airport has brought into operation a number of new pieces of infrastructure since 2015.

Table 5.2 NEW INFRASTRUCTURE AT DUBLIN AIRPORT

Project Data		
	Operational Date	Sq. Metres
Pier 1 Extension	21st May 2017	856
PBZ	6th November 2017	2,208
Pier 2 Segregation	13th November 2017	735
T1 & T2 Immigration Facilities	Q2 2019	870
Additional Bus Gates	Q2 2020	1,672
Total additions to indoor GFA (by 2020)		6,341
2014 indoor GFA		261,927
2014-2020 indoor GFA growth		2.4%
South Apron Stands Ph 1 (outside)	13th March 2017	17,717
T2 MSCP Extra Floors (outside)	28th February 2016	38,502

5.43 These additions to airport infrastructure have driven up operating costs and account for a proportion of the increase in areas such as facilities, maintenance and IT.

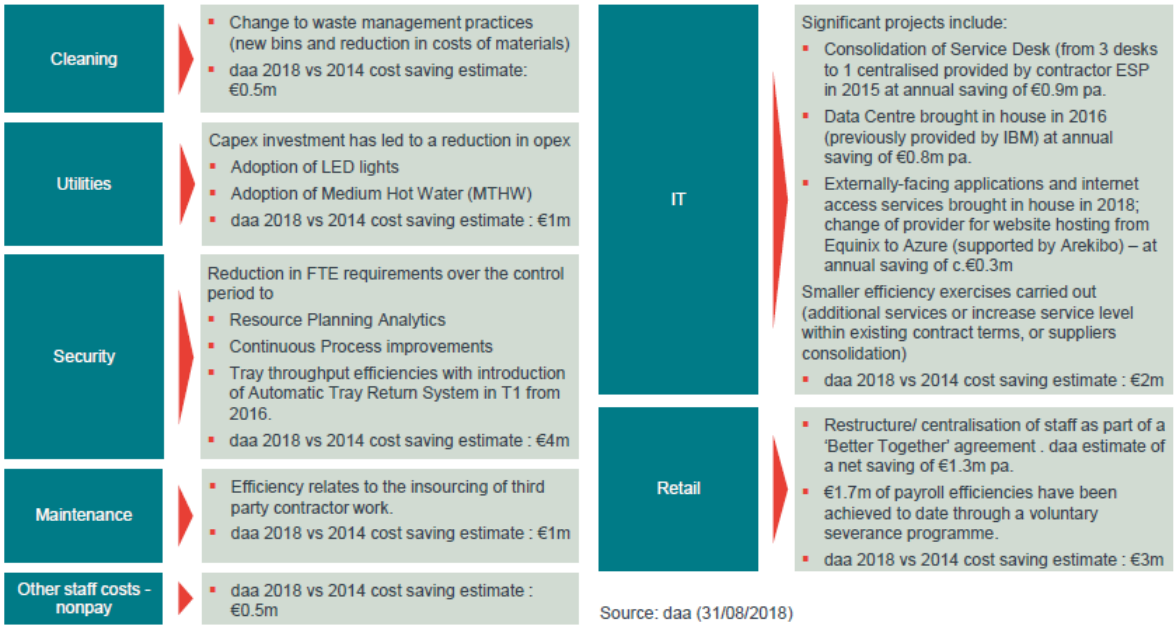
5.8 Efficiency Gains

5.44 It should be noted that in addition to responding to the increasing costs over the period 2015-2018, Dublin Airport continued to strive to achieve efficiencies in its

operations and it did succeed in implementing efficiencies in a number of its key areas including Cleaning, Energy, Maintenance, Security, IT and Retail. These combined efficiency measures culminated in an annual cost savings of €10.8m in 2018.

5.45 Frontier Economics reviewed a number of these measures, details of the efficiencies achieved are illustrated in the table below.

FIGURE 5.11 EFFICIENCIES IN KEY AREAS



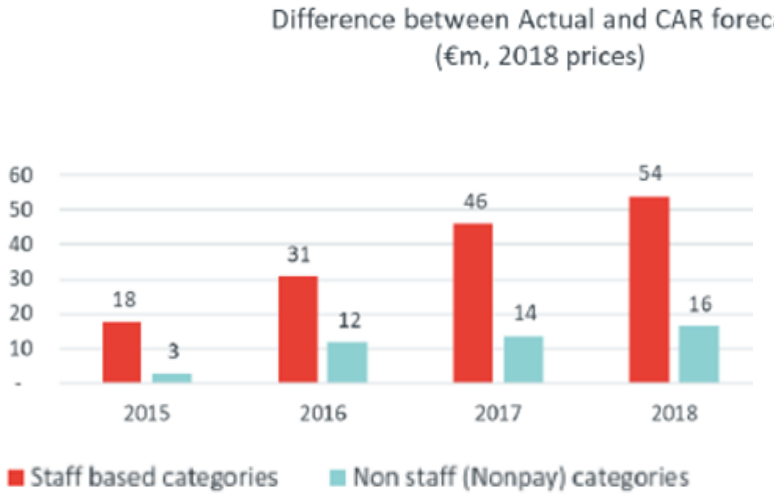
Source: daa (31/08/2018)

5.46 These efficiencies allowed Dublin Airport to curb operating expenditure in certain areas against a backdrop of rising costs driven by higher passenger numbers, wage inflation and expanding infrastructure.

5.9 Analysis of Cost Differential 2015-2018

5.47 As part of its review of the Dublin Airport operating cost base, Frontier Economics looked at the differential between Dublin Airport's total outturn costs and the Commission's operating cost allowances over the period 2015-2018.

FIGURE 5.12 DIFFERENCE BETWEEN ACTUAL COSTS AND REGULATORY ALLOWANCE



5.48 Frontier Economics decomposed this cost differential into its constituent parts which are primarily volume, price and compliance effects.

5.49 Frontier Economics examined the cost differential on the following basis

- Volume Effect – operating cost incurred on extra employees, hired to assist with more passengers than that anticipated by the Commission or higher than expected non-payroll costs driven also by the higher than projected passenger numbers
- Price Effect – operating cost incurred due to higher actual unit pay levels than the Commission's target level of pay in the case of payroll costs or contract costs being higher than expected in the case of non-payroll costs
- Compliance Effect – costs of compliance due to the response to regulatory changes that were not reflected in the Commission's 2014 Determination, in certain payroll and non-payroll cost categories
- 'Other' – costs incurred on any exceptional items plus an estimation error.

5.50 The findings of the Frontier Economics' decomposition across the three categories payroll, non-payroll and total are illustrated in the table below.

FIGURE 5.13 DECOMPOSITION OF COST DIFFERENTIAL

Results - Payroll Categories combined (opex in €m, 2018 prices)

	2015	2016	2017	2018
Actual	161	174	189	198
CAR Target	143	143	143	144
Difference	18	31	46	54
Volume Effect	12	21	27	34
Price Effect	9	7	15	13
Compliance	1	2	2	2
Other	[3]	[2]	2	5

Results – Nonpay Categories combined (opex in €m, 2018 prices)

	2015	2016	2017	2018
Actual	57	66	68	72
CAR Target	54	54	55	55
Difference	3	12	14	16
Volume Effect	2	11	12	13
Price Effect	0	1	[0]	1
Compliance	-	-	-	3
Other	[0.3]	-	2	0.4

Results (opex in €m, 2018 prices)

	2015	2016	2017	2018
Actual	218	239	257	269
CAR Target	197	197	198	199
Difference	20	42	60	70
Volume Effect	14	32	39	47
Price Effect	9	8	15	14
Compliance	1	2	2	5
Other	[4]	[2]	4	5

5.51 In the case of the payroll category while price and compliance costs have driven cost increases, it was deemed that passenger volume changes accounted for much of the cost increase.

5.52 Frontier Economics found that based on its understanding of the non-payroll cost categories for Dublin Airport, the impact of rising passenger volumes was the dominant driver of cost increases in these categories.

5.53 Looking at operating cost increases in total, the analysis suggested that passenger volume changes was the key factor in explaining the cost differential between the Commission's operating cost allowances and actual outturn costs over the period 2015-2018.

5.54 Taking 2018 as an example, in its decomposition analysis, Frontier Economics found that the volume impact accounted for 66% of the differential between the Commission's operating cost allowance and outturn costs in 2018, with the price

effect accounting for a further 20% and both compliance and the remaining other category each making up 7%.

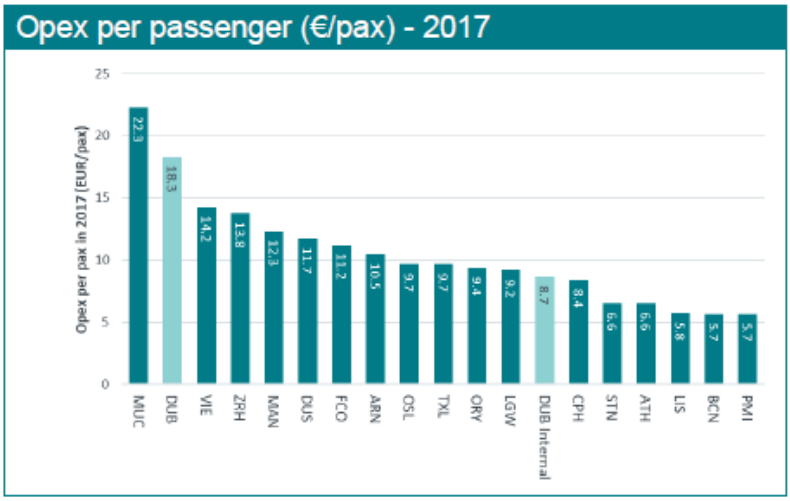
5.55 In its report, Frontier Economics concluded that its decomposition analysis demonstrated that the increase in operating costs at Dublin Airport since 2015 primarily related to measures taken by the airport in response to the unexpected and substantial increase in traffic demand. Furthermore, it found that the response taken by Dublin Airport was reasonable and that a firm operating in a competitive market facing the same conditions and constraints would have likely reacted similarly.

5.10 Dublin Airport Comparative Efficiency

5.56 In order to assess the comparative efficiency of Dublin Airport compared to peer airports, Frontier Economics looked at the reported operating costs of a group of peer airports.

5.57 Frontier Economics took the reported data from annual reports for 2017. Where the individual airports in question were part of an airport group and the numbers related to a group they were pro-rated based on the passenger numbers for the individual airport. An adjustment was also made for the relative differences in wage and utility costs between different countries.

FIGURE 5.14 COMPARATOR AIRPORT BENCHMARK OF OPERATING COSTS PER PASSENGER



5.58 When Frontier Economics looked at the operating cost per passenger at the Dublin Airport regulated entity in 2017, it was found to be cost competitive when compared to a number of its peer airports.

5.59 It should be noted however that this comparison was made using the internal data provided by daa if the analysis was based solely on the publicly reported data the comparison for Dublin Airport would not have been so favourable.

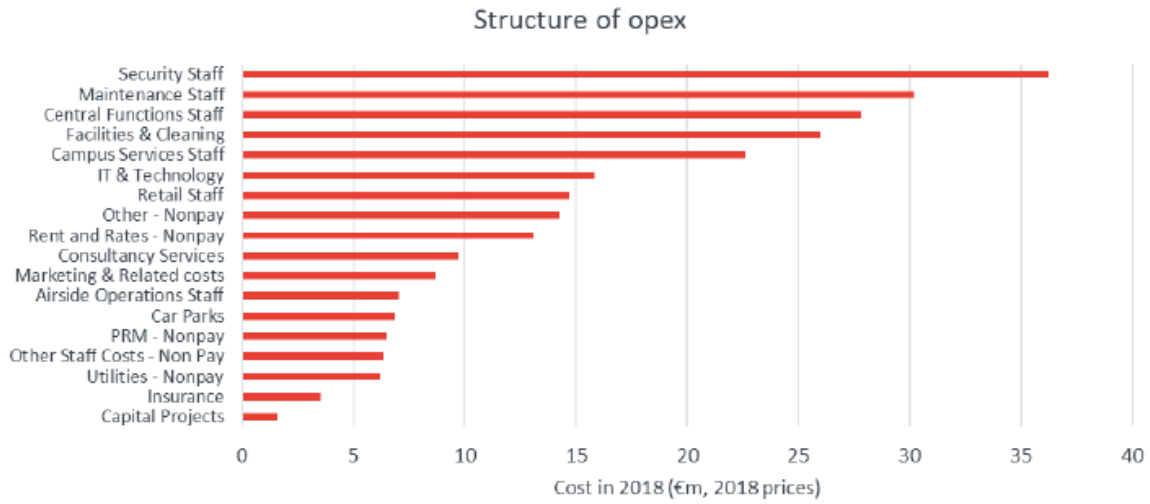
5.60 This highlights the fact that superficial evidence can be misleading and inconsistent and should not be relied upon to measure comparative efficiency. Top down benchmarks of this kind should only be used as broad indicators of relative performance rather than as a basis for establishing an efficiency frontier.

5.11 2018 Dublin Airport Operating Cost Baseline

5.61 Following its review of operating costs at Dublin Airport, Frontier Economics found that given the market conditions in which Dublin Airport currently operates, the airport's latest expected costs for 2018 provide an appropriate cost base for forecasting operating expenditure into the next regulatory determination period.

5.62 The breakdown of operating costs for Dublin Airport for the recommending 2018 baseline is illustrated below.

FIGURE 5.15 OPERATING COST CATEGORIES 2018



5.63 Given this independent validation of the 2018 cost base, Dublin Airport believes that it is critical that the Commission adopts this measure as the basis for setting its operating cost allowance going into the next regulatory determination period.

5.12 Approach to the Frontier Economics Forecast

5.64 As part of the scope of its operating cost study, Frontier Economics was asked to provide with an independent forecast of efficient operating costs for Dublin Airport for the period 2018-2024.

5.65 In deriving its operating cost forecast for Dublin Airport over the period 2018-2024, Frontier Economics looked at three key elements

- Volume effects – all things being equal, the impact of an increase in traffic on different categories of operating costs
- Real price effects – the change in the real price of different inputs over time
- Productivity assumptions – the inclusion of a productivity challenge to ensure that Dublin Airport continues to achieve operating efficiency savings.

5.66 Frontier Economics approached its forecast of operating costs for Dublin Airport based primarily on historically observed relationships between traffic demand and cost. Its starting point was a 'business as usual' base case forecast scenario. However, given the dynamic nature of the airport business it was apparent even at an early stage that there would be future unanticipated changes that would affect the Dublin Airport cost base.

5.67 Frontier Economics looked at total operating costs for Dublin Airport split over the 18 different cost categories, within each category they looked at a breakdown between the following five different areas T1, T2, Airside, Campus and Central Functions.

5.68 The Frontier Economics forecasting approach was based on first forecasting a baseline to which it then applied 'adjustments' which included adjustments for price trends and for productivity assumptions to form its base case scenario. Subsequently, daa's own estimates of incremental costs and the potential cost impacts arising from projects proposed in the next Capital Investment Programme (CIP) were added to this baseline measure.

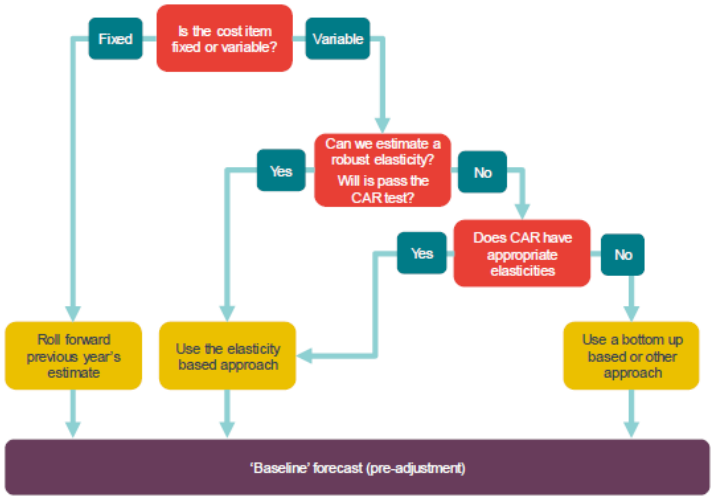
5.69 In this regard, Dublin Airport identified certain new incremental costs which were likely to arise under certain cost categories, plus it highlighted that there would be notable cost implications arising from the substantial capital investment programme which is currently being proposed to airport users. Frontier Economics then looked at how both of these factors would potentially impact operating costs for Dublin Airport over the period 2018-2024.

5.70 In terms of incremental costs, Frontier Economics looked at the anticipated step changes in operating costs for the period 2018-2024 which were not captured in the forecast base case. Frontier Economics presented its incremental cost scenario where it set out the likely impact of these additional costs on overall operating costs for Dublin Airport for the period 2018-2024. Full details of the estimated incremental costs are provided in the Frontier Economics Report contained within.

5.71 Similarly, Frontier Economics looked at the likely additional operating costs which would be incurred over the period 2018-2024 following the implementation of the proposed CIP. Frontier Economics took account of these potential additional costs in its forecast scenario where it looked at a base case forecast plus the addition of the estimated incremental costs and then the estimated operating costs associated with the proposed CIP. This scenario was in turn split into two parts where part one included what is considered core CIP – i.e. the components which can be considered more certain and the second part included the potential full impact of the proposed CIP – including the components of the CIP which are currently more speculative and uncertain.

5.72 Frontier Economics began its forecasting process by assessing whether a cost category should be defined as fixed or variable. In order to do so they followed a process for determining which approach was most relevant, based on their expert judgment and cross-checked against other publicly available elasticity information as illustrated below.

FIGURE 5.16 APPROACH TO BASELINE FORECAST



5.73 Where Frontier Economics deemed a cost category to be fixed, the category was rolled forward based on its 2018 baseline estimate with the addition of any cost item-specific price trends and productivity assumptions. Categories were said to be fixed either where the estimates of the elasticities (over the period 2010-2018) were not statistically significant or where it was felt that positive elasticities with respect to passenger growth were not indicative of long-term cost relationships. This approach did not preclude cost increases in these categories over time however these cost increases were defined as incremental and applied to the baseline forecasts.

FIGURE 5.17 FIXED COST CATEGORIES IN BASELINE FORECAST

Cost category	Pay or nonpay	Approach
IT & Technology	Pay	FTEs fixed at 2018 levels
IT & Technology	Nonpay	Opex fixed at 2018 levels*
Car Parks	Pay	FTEs fixed at 2018 levels
Car Parks	Nonpay	Opex fixed at 2018 levels
Consultancy Services	Nonpay	Opex fixed at 2018 levels
Insurance	Nonpay	Opex fixed at 2018 levels*

* These costs are fixed in the baseline but also have incremental costs.

5.74 For cost categories deemed to be variable, Frontier Economics then applied either a top down or bottom up approach to project costs for these categories out to 2024. The approach used varied depending on the nature of the cost category.

5.75 The bottom up approach involved the estimate of a cost per FTE and the application of the FTE forecast to this unit cost estimate.

FIGURE 5.18 BOTTOM UP APPROACH TO BASELINE FORECAST

Cost category	Pay or nonpay	Bottom up approach
Maintenance	Nonpay/ outsourced	Assumed the 2018 ratio of 'pay to nonpay' maintenance costs remains fixed. (However additional incremental costs apply)
Facilities & Cleaning	Nonpay/ outsourced	Assumed the 2018 ratio of 'pay to nonpay' facilities & cleaning costs remains fixed
Central Functions	Pay	HR: assumed the 2018 ratio of 'all HR FTEs: all other FTEs' remains fixed Non-HR: assumed fixed in terms of FTEs
Other*	Nonpay	Executive Lounge & Banking Charges: driven by passengers with an elasticity of 1 Other costs: fixed
Other Staff Costs	Nonpay	Assumed each area's 2018 ratio of other staff costs per FTE remains fixed
Utilities	Nonpay	Water: driven by passengers with an elasticity of 0.7 Energy: fixed
Capital Projects	Pay	We have reviewed and considered daa's bottom up analysis of FTE requirements and use their estimates
PRM	Nonpay	Increases with new PRM tender in 2019 and then remains fixed
Rent & Rates	Nonpay	Increases with rates multiplier in 2019 and rates revaluation in 2020 and then remains fixed

5.76 In contrast the top down approach involved identifying the cost driver (e.g. passengers or ATMs) for the specific category, estimating the elasticity between the cost category and the cost driver over the period 2010-2018, establishing whether this elasticity was likely to prevail for the next regulatory period and then applying this ratio to the driver forecast. This approach resulted in a baseline forecast to which Frontier Economics subsequently applied price trends, productivity assumptions and added any incremental cost changes where appropriate.

FIGURE 5.19 TOP DOWN APPROACH TO BASELINE FORECAST

Cost category	Pay or nonpay	What do we forecast?	Cost Driver	Elasticity
Security	Pay	FTEs	Passengers	0.55
Maintenance	Pay	FTEs	Passengers	0.35
Facilities & Cleaning	Pay	FTEs	Passengers	0.52
Campus Services	Pay	FTE	Passengers	0.23
Retail	Pay	FTE	Passengers	0.46
Airside Operations	Pay	FTE	ATMs	0.8
Marketing & Related costs	Nonpay	Opex	Passengers	0.99

5.77 Frontier Economics also reported that in regard to its bottom up approach to non-pay and utility costs that in effective this approach was equivalent to applying the following weighed elasticities to these cost categories.

FIGURE 5.20 EQUIVALENT WEIGHTED ELASTICITIES

Cost category	Pay or nonpay	What do we forecast?	Cost Driver	Equivalent weighted elasticity*
Other	Nonpay	Opex	Passengers	0.32
Utilities	Nonpay	Opex	Passengers	0.15

5.13 Forecast Assumptions

5.78 In estimating operating costs for Dublin Airport for 2018-2024 Frontier Economics made a number of assumptions in regard to forecasts for the following parameters

- Traffic Projections
- Wage Inflation
- Pension Contributions

5.79 Frontier Economics based its operating forecast based on the assumption that passenger traffic at Dublin Airport would reach —— by 2024 up — from 31.4mppa in 2018. This would be based on an average annual growth rate of — per annum. In addition, they assumed that aircraft movements would reach — per annum by 2024 which would be an increase of — from 236,000 in 2018.

FIGURE 5.21 DUBLIN AIRPORT PASSENGER TRAFFIC FORECAST

FIGURE 5.22 DUBLIN AIRPORT ATM FORECAST

5.80 Frontier Economics applied the following wage and pension cost[6] trends in order to build their operating cost forecasts. They applied a slightly uplifted cost trend for the IT and Technology to reflect specific market conditions in that sector.

FIGURE 5.23 PAY INCREASE ASSUMPTIONS

[6] In 2015, daa implemented a new defined contribution pension scheme. As part of that scheme current members of the IASS scheme transferred over to a new scheme. The company offered competitive contribution rates based on the level of percentage invested by the employee. The pension contribution amounts were set at 2015 salary rates or based on a new members salary. In 2020, the pensionable salary amount will be updated based on 2020 salaries or live salaries going forward. Due to the overall trend of salary increases over the current period, this will result in an employer contribution cost step change in 2020 and pension contributions will continue to increase annually from 2020 in line with the expected pay trend.

FIGURE 5.24 PAY INCREASE ASSUMPTIONS IT CATEGORY

[redacted]

5.81 In forecasting operating costs for the next regulatory determination Frontier Economics applied where appropriate adjustments for step increases in cost. This included firstly identifying incremental cost changes impacting individual cost categories over the period 2020-2024 and secondly cost impacts arising from projects proposed in the next CIP. Full details of the incremental and CIP related cost impacts can be found in the Frontier Economics report presented here within.

5.14 Efficiency Assessment

5.82 A key element of the review undertaken by Frontier Economics was an efficiency assessment of the Dublin Airport operating cost base. Frontier Economics looked at the evidence available regarding the relative efficiency of the Dublin Airport cost base. Frontier Economics concluded that an additional productivity challenge for "frontier shift" was justified going forward, on this basis they applied an 0.6% annual downward adjustment to their forecasts for productivity efficiency. This efficiency adjustment was based on the average annual multi-factory productivity (MFP) growth achieved by Ireland over the period 2000-2016 for the domestic sector recorded by the Central Statistics Office.

FIGURE 5.25 MULTI-FACTOR PRODUCTIVITY 2000-2016

5.83 This annual efficiency adjustment was applied to the Dublin Airport traffic forecasts in tandem with a relative conservative estimate of passenger volume elasticities going forward. Frontier Economics found no evidence of inefficiencies in Dublin Airport's 2018 cost base and following its review of historic operating costs it concluded that there was no evidence to support any further efficiency target for "catch up" given that it was reasonable to assume that in the case of Dublin Airport compliance cost pressures and frontier shift efficiencies had approximately cancelled each other out since 2014.

5.84 As part of its study, Frontier Economics reviewed a number of projects that daa had put forward as a means of potentially achieving additionally efficiencies over the period 2018-2024.

5.85 While daa understands and accepts the justification for the Frontier Economics efficiency adjustment, it believes that despite its proposed efficiency measures, the annual efficiency adjustment set by Frontier Economics will be difficult for Dublin Airport to achieve in practice against a backdrop of increasing passenger traffic and expanding capacity. Going forward, Dublin Airport will however look at the various possible measures that could be used to achieve further costs savings

[redacted]

5.15 Operating Cost Projections 2018-2024

5.86 Frontier Economics presented its operating cost forecasts for Dublin Airport on the following basis

- A base case forecast inclusive of volume, price, and productivity growth
- A base case forecast excluding the productivity assumption
- A base case forecast with the addition of incremental costs and including the productivity adjustment
- A base case forecast plus the addition of the estimated incremental costs and the estimated operating costs associated with the proposed CIP. This in turn is split out into two parts: (i) part one includes what is considered core CIP – i.e. the components which can be considered more certain; and (ii) part two includes the potential full impact of the proposed CIP – including the components of the CIP which are currently more speculative and uncertain. The productivity assumptions have been applied to all these measures.

5.87 Full details of these different forecast scenarios can be found in the Frontier Economics report contained here within.

FIGURE 5.26 DUBLIN AIRPORT OPERATING COST FORECAST 2018-2024

5.88 In addition, Frontier Economics also provides an Operating Cost forecast for 2018-2024 on a per passenger basis where

- Operating cost per passenger decreases by [redacted] per annum (CAGR) under the base case scenario
- Operating cost per passenger increases by [redacted] per annum (CAGR) when incremental costs and additional costs arising from the implementation of the proposed CIP (core and other capacity) are added to the base case.

FIGURE 5.27 DUBLIN AIRPORT OPERATING COST PER PASSENGER FORECAST 2018-2024

5.16 Approach to Risk

5.89 daa accepts that an integral part of the current regulatory model is the risk that actual operating costs for Dublin Airport will exceed the cost allowance set by the Commission. We have accepted this risk on the basis that if Dublin Airport can beat the operating cost target set by the Commission then the company will get to benefit from this cost saving. However, we are concerned that there may be instances where

unanticipated costs will be incurred by Dublin Airport which are outside the airport's control and which are not automatically remunerated through airport charges. Such costs should be recognised by the Commission as they are beyond the airport's control and incompatible with incentive regulation.

5.90 The first area of concern would be in the field of security and compliance where mandated operational requirements can be put in place which are outside the airport's control and which are not automatically remunerated through airport charges. An example of this would be Hold Baggage Screening costs, whereby in March 2017, Dublin Airport's security function became responsible for the provision of Hold Baggage Screening (HBS) at the airport. This was as a result of the transfer across the State of responsibility for this service from airlines to airport operators, by way of amendment to the National Civil Aviation Security Programme ("NCASP").

5.91 These incremental costs came on stream from 2018 and it is estimated that they will cost Dublin Airport almost €5m during the remainder of the current regulatory period. These additional costs are not recoverable through airport charges, even though they are a result of efficiently incurred expenditure and they are mandatory costs outside the control of the airport. Therefore, daa believes that costs such as these should be remunerated in accordance with accepted economic principles.

5.92 The second area of concern relates to Energy costs incurred at Dublin Airport. Energy costs are currently quite volatile and difficult to project. For the purpose of the operating forecast costs for the forthcoming regulatory determination period, daa provided Frontier Economics with an independent assessment of future energy costs carried out by specialist consultants Energy Solutions (ESL). However it should be noted that any hedged position relating to energy costs beyond 2 years is not entirely indicative of future costs.

5.93 There are a number of specific risks that could potentially raise energy costs. The recent introduction of the integrated electricity market has and will see additional charges/rebates being passed through to the consumer, however this is not possible to estimate and no allowance for this has been made in the energy forecasts used by Frontier Economics. The likelihood however is of increased cost. Furthermore, natural gas is largely imported from the UK at a Sterling cost base and no allowance has been made for Brexit and the potential cost implications of this going forward. In addition, there are risks around future Carbon costs and the possible introduction of a Carbon Tax over the course of the next 5 years.

5.94 daa believes that instances such as this represent an unacceptable level of regulatory risk which should be addressed by a cost adjustment mechanism that would be compatible with incentive regulation. We would therefore recommend the introduction of an additional annualised cost allowance that would allow for the recovery of efficient costs that are incurred by Dublin Airport over the course of the regulatory period which were not anticipated in the Commission's operating cost allowance.

5.95 Another acceptable option would be to provide a risk-sharing mechanism in the regulatory formula for regulatory, compliance or costs fully outside of our control of the airport and which are material in nature on an annual basis e.g. costs greater than €0.5m p.a.

5.96 Alternatively, any delay in remuneration until the subsequent regulatory determination should take into account the time value of money adjustments as the impact of receiving the remuneration some 5 years represents a cost for Dublin Airport.

5.17 Dublin Airport Labour Constraints

5.97 Dublin Airport as an employer is continuing to deal with the implications of having a number of its employees working on different terms and conditions.

5.98 daa employees broadly consist of two groups those whose contracts pre - date the opening of T2 in 2010 and those who were hired for the opening of T2 and /or those who were subsequently hired after 2010. This is due to the fact that as part of the preparation for the opening of the second terminal at Dublin Airport, daa developed a new revised set of terms and conditions, which were negotiated and agreed with unions, for prospective employees. These new terms and conditions have been adopted by the company since 2010.

5.99 The existence of two different sets of pay conditions has implications for the comparative cost of different airport activities due to the proportion of employees employed on pre or post 2010 employment contracts.

5.100 In 2014, the Commission's consultants SDG proposed the potential outsourcing of certain airport activities as means of reducing costs going forward. However, daa demonstrated that this was not a viable cost savings measure given that the outsourcing of a number of its activities would likely be subjection to Directive 2001/23/EC (TUPE Regulations). As such, there would be no savings for Dublin Airport if pre-2010 employees opt to transfer into the employment of the contractor

on daa terms. In effect the contractor would be required to employ the ex-daa employees on their previous daa terms. In addition, it would be likely that Dublin Airport would have to bear the contractors' margin and the cost of administering any outsourcing contract thereby eliminating any potential saving.

5.101 daa is currently engaged in detailed and delicate talks with the employee representative union SIPTU in an effort to secure agreement on a range of sensitive employment related issues. These talks are ongoing but are currently at a critical stage. The overall purpose of the engagement is to build a better and more productive working relationship which facilitates change through a more collaborative approach and through addressing matters of common concern.

6. Commercial Revenues

6.1 Overview of commercial activities

6.1 In addition to providing airlines and passengers with aeronautical infrastructure and services, Dublin Airport generates income from commercial activities. Commercial activities are an important part of our business and currently contribute around 45% of total revenue. These activities also have significant value for our commercial partners.

6.2 Under the single till approach, the revenue raised from our commercial business is used to subsidise our aeronautical charges.

6.3 We are currently incentivised to increase the revenues raised from commercial activities as we retain any additional revenues above the target, and bear the cost where revenues are below target, until prices are reset. In 2014, CAR introduced a rolling scheme to ensure that these incentives are equalised across all years of the price control.

6.4 As we increase our commercial revenues over time, the benefits are passed through to users in the form of lower charges than would otherwise prevail. In simple terms, the greater our long run commercial revenue, the lower our long run aeronautical charges (all else being equal). Therefore, while we benefit from increasing our commercial income in the short term, these benefits are accrued by airlines and passengers in the long run.

6.5 In the current period, we have achieved stronger than expected growth in commercial revenue. In relative terms, this will result in a higher commercial revenue subsidy and lower charges in the next period. Looking to the future, we expect a slower rate of commercial revenue growth due to a combination of capacity constraints, slower traffic growth and considerable downside risk from macroeconomic events.

6.6 This section begins by providing an overview of our commercial activities and our performance relative to the targets set by CAR in 2014. We then outline factors affecting future commercial revenues and set out our how these have shaped our commercial strategy and forecasts for the next period.

6.2 Retail

6.7 Dublin Airport earns retail revenues from three main sources.

- Direct retail. We directly operate airside duty-free and duty-paid retail outlets through our subsidiary, Aer Rianta International (ARI). These direct retail units are located within both terminals within the departure locations (including units in piers) along with a small unit on arrival within Terminal 2. ARI has responsibility for staffing these stores and for all operational decisions, including stock procurement, in-store merchandising and selling of product. Our core product range includes alcohol, tobacco, perfume and cosmetics, confectionary, fashion and souvenirs. Perfume and cosmetics, alcohol and tobacco account for approximately 75% of ARI's gross margin.

- Food and beverage concessions. Airside and landside food and beverage outlets are run by third party retailers under licence agreements awarded through competitive tenders. Unlike direct retail, operational decisions and operating costs are the responsibility of the concessionaire. We retain responsibility for the construction and refurbishment of units and ongoing maintenance of the general terminal space within the retail zones. There are currently 40 food and beverage units across the airport, operated by 13 concessionaires.

- Retail concessions. We also award licences to concessionaires who sell a wide range of retail products such as books, magazines, clothing, pharmacy and gifts. Our current concessionaires include brands such as Boots, Dixons Travel and WH Smith.

6.8 The direct retail, food and beverage and concession models have different risk profiles and revenue drivers.

6.9 For direct retail outlets, Aer Rianta bears full cost risk and demand risk—i.e. if operating costs increase or demand falls then our commercial income will fall. Passenger numbers are a key driver of direct retail income, but there are a number of other factors that affect passenger average spend (PAS) that also need to be considered, including passengers' disposable incomes, the amount of floor space dedicated to retail, general trends in demand for our main products, passenger dwell times, and competition from other retailers (including on-site, high street, online, and in-flight).

6.10 By contrast, the concession model largely protects us from cost risk and typically reduces our exposure to both upside and downside revenue risk, since we only receive a portion of revenue and receive a guaranteed minimum sum even if revenue falls below

a certain level.[7] The concession agreements also tend to be medium-term in nature (typically 4-5 years) and the terms of the agreements (e.g. the portion of revenue share and/or the guaranteed minimum sum) are determined by prevailing market conditions at the time the licences are awarded. This means that our concessions income is less responsive to changes in passenger demand than the income from our direct retail offering.

6.11 Moreover, the differing product mix of these business areas means that the underlying competitive dynamics differ. For example, food and beverage sales are subject to a different set of competitive pressures than sales of perfume and cosmetics, alcohol and tobacco in ARI's retail stores.

6.12 In 2017, total retail income amounted to €93.8m. ARI sales accounted for approximately two thirds of retail income, food and beverage concessions c. 20%, and retail concessions approximately 15%. Over the period from 2014 to 2017, total retail income grew by over 50%, reflecting strong growth in the direct retail and food and beverage segments, in particular.

6.13 Our latest estimate for 2018 is for a much slower year-on-year increase 5%, taking overall retail revenues to €98.8m. This estimate includes a decline in revenue from retail concessions of around 8%, and a tailing off of growth in perfume and cosmetics revenue (1.4% year-on-year increase).

TABLE 6.1 RETAIL HISTORIC PERFORMANCE

Income (€m)	2014	2015	2016	2017	2018 LE	2014-18
Direct retail	36.1	47.9	54.5	59.8	64.2	**Δ** 28.1
Food and beverage	14.1	16.6	19.2	21.1	22.8	**Δ** 8.7
Retail concessions	9.8	11.5	12.4	12.8	11.8	**Δ** 2.0
Total retail	**60.1**	**76.0**	**86.2**	**93.8**	**98.8**	**Δ 38.7**
% growth		*26%*	*13%*	*9%*	*5%*	*64%*

[7] There can, however, be upfront costs associated with changing a retail unit from a direct retail outlet to a concession outlet, or vice versa.

6.3 Commercial Property

6.14 Dublin Airport earns income from the rental of property in Dublin Airport and its vicinity to airport users and other entities, primarily on typical property license/lease arrangements. The property portfolio is varied and includes office space, hangars, warehousing facilities, check-in-desks and other airport-specific facilities (such as the fuel farm). The majority of tenants are involved in aviation related activities.

6.15 Unlike other parts of our non-aeronautical business, income from commercial property is not linked to passenger numbers in the short to medium run. The key drivers of commercial property income are occupancy rates and the agreed rents established in contracts. These in turn depend on wider demand for property in the local and national market, and prevailing market rents at the time that contracts are negotiated. Commercial property competes with other commercial premises locally; in Dublin city centre; and, to a lesser extent, nationwide. In the next period, our regulated commercial property segment will also compete with Dublin Airport Central.

6.16 The unresponsiveness of commercial property revenue to changes in passenger numbers is borne out by income figures from 2014 and 2017, which show commercial property revenue growth 2% (or around 0.7% per annum) compared to total passenger growth of 36%. Indeed, commercial property revenue growth has been slower than in all our other non-aeronautical revenue businesses.[8]

TABLE 6.2 COMMERCIAL PROPERTY HISTORIC PERFORMANCE

Income (€m)	2014	2015	2016	2017	2018 LE	2014-2018
Total commercial property	**25.6**	**24.7**	**26.0**	**26.2**	**27.3**	**Δ1.7**
% growth		*-4%*	*5%*	*1%*	*4%*	*7%*

6.4 Commercial Concessions

6.17 Our commercial concessions business relates to the provision of space, accommodation, facilities and service contracts to commercial entities within Dublin Airport and its surrounding campus. This revenue stream primarily comprises banking (including foreign exchange services) and car hire operations. The other main sources of income are telephony and busses. The business model is similar to that for retail concessions in the sense that the concessionaire is typically required to pay a guaranteed minimum

8 [redacted]

sum and, where certain revenue thresholds are met, a portion of revenues. Contracts are typically put out to competitive tender every two to three years.

6.18 2017 commercial concessions revenue stood at €28m, [redacted] .

6.19 In the long run, the key drivers of our commercial concessions' income include the number of parking spaces and amount of floor space allocated to concessions, and general trends in demand for car hire, banking and foreign exchange services. In the short run, income is largely determined by existing contractual arrangements and, in particular, the minimum annual payments established in the contracts. In recent years, there has been sufficient available capacity for car hire operators in particular to grow their operations and we have seen growth in this business segment as passenger volumes have grown.

6.20 A number of contracts will be tendered in the next 18 months and the outcome will determine the income from this business segment in the next control period.

TABLE 6.3 COMMERCIAL CONCESSIONS HISTORIC PERFORMANCE

Income (€m)	2014	2015	2016	2017	2018 LE	2014-18
Banking	[redacted]					
Car hire	[redacted]					
Other (including telephony and busses)	[redacted]					
Total commercial concessions	**18.4**	**22.1**	**23.3**	**28.0**	**29.4**	**Δ11.0**
% growth		*20%*	*5%*	*20%*	*5%*	*60%*

6.5 Car Parking

6.21 Dublin Airport operates short-term and long-term car parks with approximately 20,000 spaces serving passengers throughout the year. In terms of long-term parking, we operate three car parks. These car parks are located away from the terminal building and require bus transport for customers. Our short-term car park offering is located in close proximity to the terminal buildings. Passengers are able to pre-book space online or turn up on the day.

6.22 The key determinants of car parking income are the number of spaces available, the occupancy rate, the tariff structure, and the value for money relative to alternatives. We face direct competition from car parking facilities on lands surrounding the airport, such as Quick Park, the Clayton Hotel and ParkPnP. We also compete with alternative modes of transport to the airport, such as buses, coaches, and taxis.

6.23 A 2016 survey noted that approximately 35% of passengers arrived at the airport by car, 35% by bus or coach, 25% by taxi, and 5% by other means.[9] However, a significant proportion of passengers arriving by car are dropped off at the airport, and therefore do not use the car parking facilities. The total modal share of passengers driving to the airport and using car parking is therefore closer to 15%. We expect that public transport will increase into the future with the introduction of the National Transport Authority's Bus Connects project and the planned Metro development in coming years.

6.24 In 2017, car park revenue was €43.7m. Short term parking facilities accounted for just over half (52%) of this amount. We estimate that this will grow by a further 9% in 2018 to €47.4m. The strong growth in car parking income has followed from our significant investment in expanding our short term car parks and resurfacing the LT Red car park in the current period.

[9] National Transport Authority, 'NTA Passenger Transport Surveys at Dublin, Cork and Shannon Airports 2016', Final Report.

TABLE 6.4 CAR PARKING HISTORIC PERFORMANCE

Income (€m)	2014	2015	2016	2017	2018 LE	2014-18
Long Term Red						
Long Term Blue						
Short Term						
Other						
Total car parking	**27.5**	**32.3**	**38.5**	**43.7**	**47.4**	**Δ19.9**
% growth		*17%*	*19%*	*13%*	*9%*	*72%*

6.6 Advertising

6.25 Dublin Airport offers exterior and interior advertising and sponsorship opportunities (available on long and short-term contracts) through both direct contacts with potential advertisers, and agencies representing advertisers. In 2015, we introduced 62 digital advertising screens (known as Aerpods) across the airport, capturing all parts of the customer journey.[10]

6.26 This business segment competes with a wide range of alternative types of advertising, including television, radio, print media, and online. For example, the IAB/PwC Online Ad spend Study reported total digital advertising expenditure of €491m for the year ended December 2017.[11] The revenues are not tied directly to passenger volumes, though the attractiveness of our offering to potential advertisers is dependent on footfall, as well as the quality and pricing of our services relative to alternatives.

6.27 Income from advertising declined sharply following the financial crisis, but has since recovered, partly through attractive new advertising opportunities generated by the opening of T2. In 2015, the 25% revenue increase reflects the introduction of the Aeropods. This step change in revenue was a one-off increase that will not result in

[10] Aerpods are 70" screens with 24 hour display.

[11] https://iabireland.ie/press-release-adspend-2017/

continued year-on-year growth. Indeed, revenues have since flatlined due to stagnating demand for static advertising.

TABLE 6.5 ADVERTISING HISTORIC PERFORMANCE

Income (€m)	2014	2015	2016	2017	2018 LE	2014-18
Total advertising	**3.6**	**4.5**	**4.7**	**4.4**	**4.8**	**Δ1.2**
% growth		*25%*	*5%*	*-6%*	*8%*	*33%*

6.7 Other

6.28 The primary sources of other revenue are the US Customs and Border Patrol (CBP) facility in Terminal 2 and Dublin Airport Travel Services, which includes lounges, fast track and platinum services.

6.29 The CBP allows US bound passengers to undertake all US immigration and customs inspections at Dublin Airport prior to departure. This allows passengers to avoid immigration queues upon arrival in the USA, thereby enhancing the overall passenger experience, and demand for this service has been strong. Passenger satisfaction with the US preclearance service has remained high.

6.30 Ireland is currently the only European country to provide US preclearance services, though it is not unique to Dublin Airport as Shannon Airport also provides this service. The US government has indicated that it is seeking to expand this function to other airports across Europe and, in 2016, it signed an agreement with the Swedish government to allow Stockholm Arlanda Airport to introduce a preclearance service.[12] Swedavia has since indicated that it will not be introducing this service as a result of the introduction of a national aviation tax, increased costs, a change in the conditions for introducing the service, and revised investment priorities.[13] This highlights the issues and risks that accompany the provision of this service.

6.31 Income from CBP was €11.2m in 2017. The main income drivers are the number of passengers flying to the US and the price charged to airlines.

6.32 In terms of price, we currently charge airlines a fee per departing passenger (€7.90) for the CBP service. This compares favourably to the charge at Shannon Airport (€10.50 per departing passenger).

[12] https://www.swedavia.com/about-swedavia/news/agreement-reached-on-us-preclearance-at-stockholm-arlanda-airport/#gref.
[13] https://www.swedavia.com/globalassets/om-swedavia/roll-och-uppdrag/swedavias-annual-and-sustainability-report-2017.pdf

6.33 As set out in the Airport Charges Consultation in November 2018, we understand that the operating cost associated with providing additional CBP officers will be borne by daa from 2019.

6.34 DATS provides a range of added value services, including:

- Executive lounges—daa operates three lounges (Terminal 1, Terminal 2, and the 51st & Green in the US CBP area) offering passengers a comfortable setting, complete with business facilities.
- A Fast Track facility that provides security clearance in 10 minutes. The facility is used by 760,000 passengers per annum and currently has an average queue time of less than three minutes.
- Platinum Services, a 24-hour private terminal, open seven days a week, with on-demand services to meet individual client needs. We operate seven suites, one of which is a designated meeting room facility. General Aviation provides a significant proportion of Platinum Services income.

6.35 Our lounges, fast track facility and premium services combined for income of €12.9m in 2017, having experienced solid growth in all three areas in recent years.

TABLE 6.6 OTHER: HISTORIC PERFORMANCE

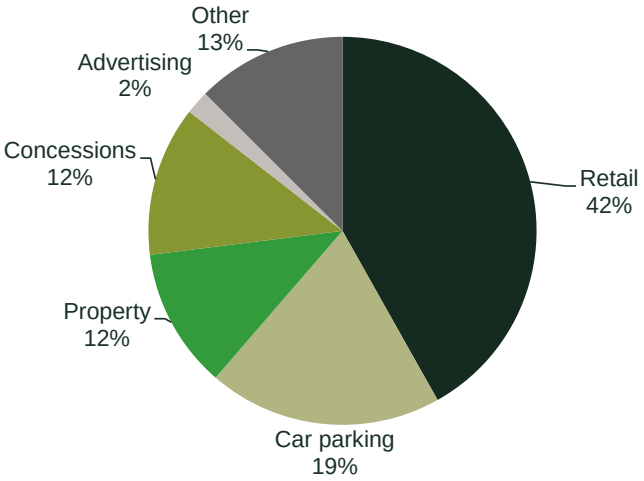
Income (€m)	2014	2015	2016	2017	2018 LE	2014-18
CBP	7.0	8.2	9.3	11.2	13.0	**Δ** 6.0
Executive lounges (incl 51st&Green)	2.6	3.2	4.3	5.9	7.3	**Δ** 4.7
Platinum services	0.6	0.9	2.3	2.7	3.1	**Δ** 2.5
Fast track / Airport Club	0.7	1.4	2.2	3.6	3.5	**Δ** 2.8
Other	3.1	2.6	3.7	4.6	3.7	Δ 0.6
Total other	**14.0**	**16.2**	**20.8**	**28.0**	**30.6**	**Δ 16.6**
% growth		*16%*	*28%*	*34%*	*9%*	*119%*

6.8 Summary of commercial activities

6.36 Dublin Airport offers a wide range of commercial services that improve overall passenger experience and generate benefits for our commercial partners. We have seen

growth across our portfolio in recent years, but retail remains our biggest commercial segment.

FIGURE 6.1 COMMERCIAL REVENUE BY CATEGORY IN 2017

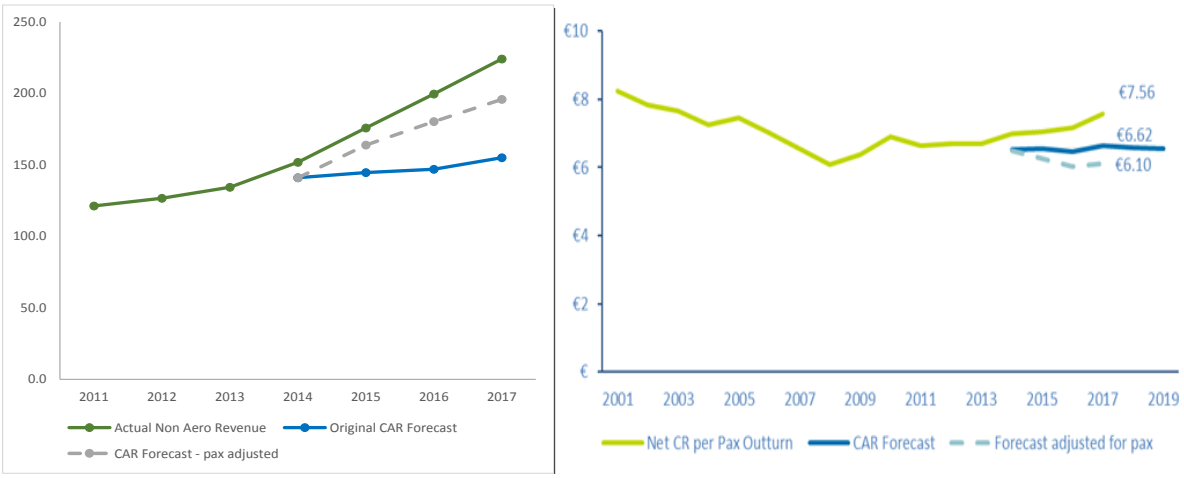


Source: Dublin Airport 2017 Regulatory Accounts

6.9 Performance relative to CAR's determination (2015-19)

6.37 Commercial activities have performed strongly in the three years of the price control to date on the back of strong traffic growth and targeted commercial initiatives that generated a higher yield per passenger. Commercial revenue has increased from €152m in 2014 to €224m in 2017. In 2017, daa exceeded CAR's target by €69m.

FIGURE 6.2 COMPARISON TO CAR TARGET FLEXED FOR ACTUAL PAX



6.38 Our latest estimate suggests that in 2018, commercial revenues will grow by approximately 6% to €238.2m. This reflects a slowdown in growth relative to the first three years of the control period.

6.39 With the exception of advertising, each of our revenue categories has exceeded the CAR target. Retail revenue is approximately 45% above target.

TABLE 6.7 TOTAL REVENUE (€)

	Outturn revenues				CAR determination				Variance to settlement			
Income (€m)	2015	2016	2017	2018 LE	2015	2016	2017	2018 LE	2015	2016	2017	2018 LE
Retail	76.0	86.2	93.8	98.8	59.0	60.2	61.3	62.5	17.0	26.0	32.5	36.3
Commercial property	24.7	26.0	26.2	27.3	21.6	22.2	22.9	23.5	3.1	3.8	3.3	3.8
Commercial concessions	22.1	23.3	28.0	29.4	17.1	17.2	18.4	18.5	5.0	6.1	9.6	10.9
Car parking	32.3	38.5	43.7	47.4	28.0	27.8	32.1	33.0	4.3	10.7	11.6	14.4
Advertising	4.5	4.7	4.4	4.8	4.1	4.3	4.4	4.6	0.4	0.4	0.0	0.2
Other	16.2	20.8	28.0	30.6	14.7	15.3	15.8	16.5	1.5	5.5	12.2	14.1
Total income	**175.8**	**199.5**	**224.0**	**238.2**	**144.6**	**146.9**	**155.0**	**158.6**	**31.2**	**52.6**	**69.0**	**79.6**

TABLE 6.8 REVENUE PER PASSENGER (€)

	Outturn revenues				CAR determination				Variance to settlement			
Income (€m)	2015	2016	2017	2018	2015	2016	2017	2018	2015	2016	2017	2018
Retail	3.04	3.09	3.17	3.14	2.67	2.65	2.62	2.60	0.37	0.44	0.55	0.54
Commercial property	0.98	0.93	0.88	0.87	0.98	0.98	0.98	0.98	0.00	(0.05)	(0.10)	(0.11)
Commercial concessions	0.88	0.84	0.95	0.93	0.77	0.76	0.79	0.77	0.11	0.08	0.16	0.16
Car parking	1.29	1.38	1.48	1.51	1.27	1.22	1.37	1.37	0.02	0.16	0.11	0.14
Advertising	0.18	0.17	0.15	0.15	0.19	0.19	0.19	0.19	(0.01)	(0.02)	(0.04)	(0.04)
Other	0.65	0.75	0.95	0.97	0.67	0.67	0.68	0.69	(0.02)	0.08	0.27	0.28
Total income	**7.02**	**7.15**	**7.57**	**7.58**	**6.54**	**6.46**	**6.62**	**6.59**	**0.48**	**0.69**	**0.95**	**0.99**

Our strong performance can be explained by a number of factors, which are outlined in turn overleaf.

6.10 Higher than forecast passenger numbers

6.40 Passenger volumes are an important revenue driver for many of our commercial activities. As discussed elsewhere in this document, traffic has exceeded the levels forecast by CAR when the price cap was last set in 2014. Between 2014 and 2017, passenger numbers grew at a compound annual growth rate of 11%. This compared to forecast annual growth of 3% that was used by CAR to estimate commercial income and to calculate the price cap.

6.41 We estimate that the unanticipated traffic growth explains 47% of the differential between the commercial income target built into CAR's determination and the outturn level achieved in the control period to date. The remaining 53% is explained by passengers spending more per head—reflecting a general increase in consumption, product optimisation and price effects—and capital projects generating higher revenues than anticipated.

6.11 The strength of the Irish economy

6.42 Like other businesses, our commercial income is affected by the health of the Irish economy and the economies of the countries that are served by the airport. The wider macroeconomic picture affects both:

- the number of passengers using the airport; and
- these users' willingness to pay for non-aeronautical services.

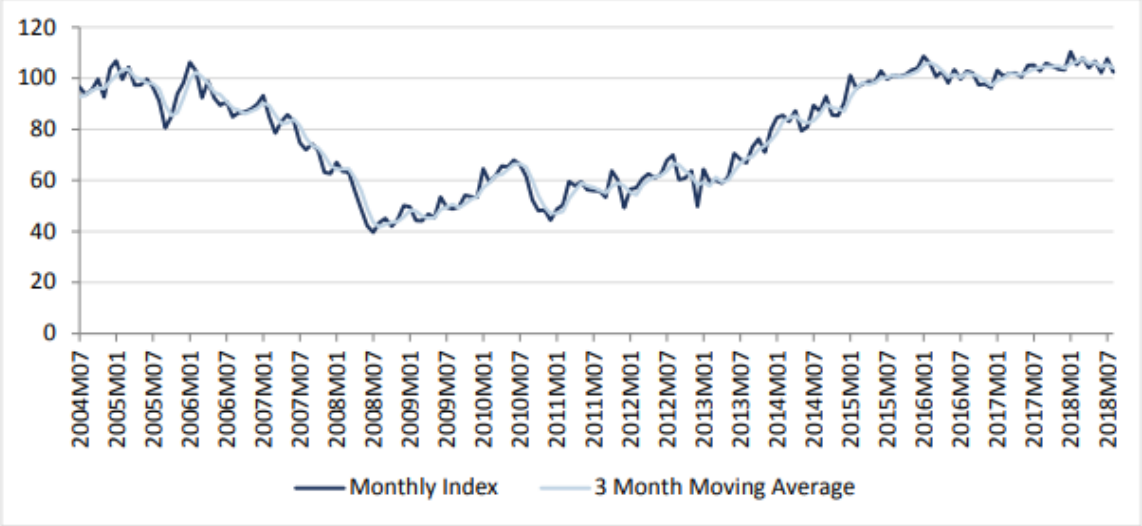
6.43 A stronger economy will generally result in a greater number of business and leisure trips (i.e. increased passenger numbers), and a higher spend per passenger (i.e. increased revenue yield).[14]

6.44 Macroeconomic indicators note that the Irish economy has strengthened more rapidly than expected, since the last determination. In particular, Ireland has seen a marked declined in the rate of unemployment, and sustained growth in national GDP, real wages and household disposable income since 2013. At the same time, Consumer Price Index (CPI) inflation has remained low (and even negative in 2016).

[14] The yield per passenger could, however, fall if the passenger mix were to change.

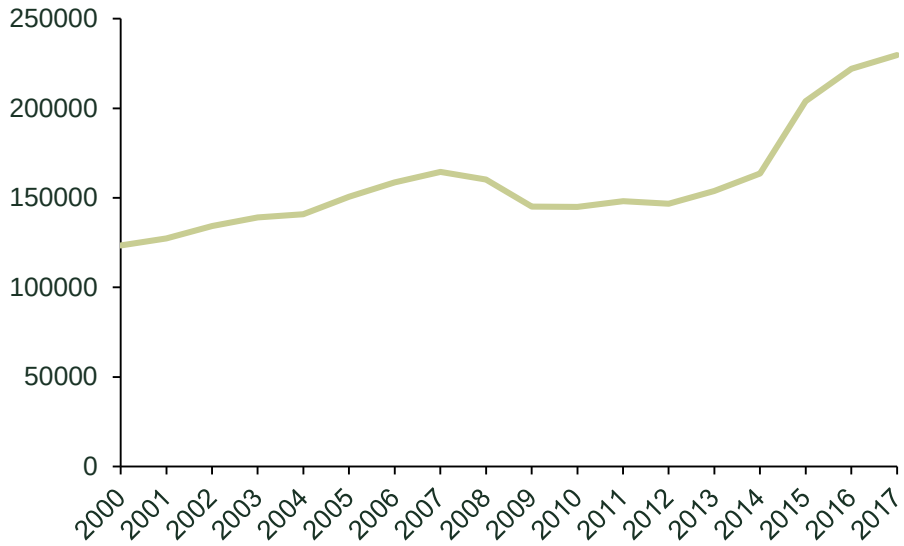
6.45 Of particular significance for our direct retail and concessions activities are levels of disposable income and consumers' confidence in the economy and their personal financial situations. Employment growth, an increase in the number of hours worked and earnings growth have all contributed to higher disposable income. Consumer confidence is also high in Ireland and although it fell slightly at the start of 2018, it remains significantly higher than the European average. The ESRI/KBC consumer sentiment indicator shows consumer confidence has increased significantly since 2014.

FIGURE 6.3 ESRI/KBC CONSUMER SENTIMENT INDICATORS



Source: ESRI (2018), 'Quarterly Economic Commentary, Autumn 2018', 26 September.

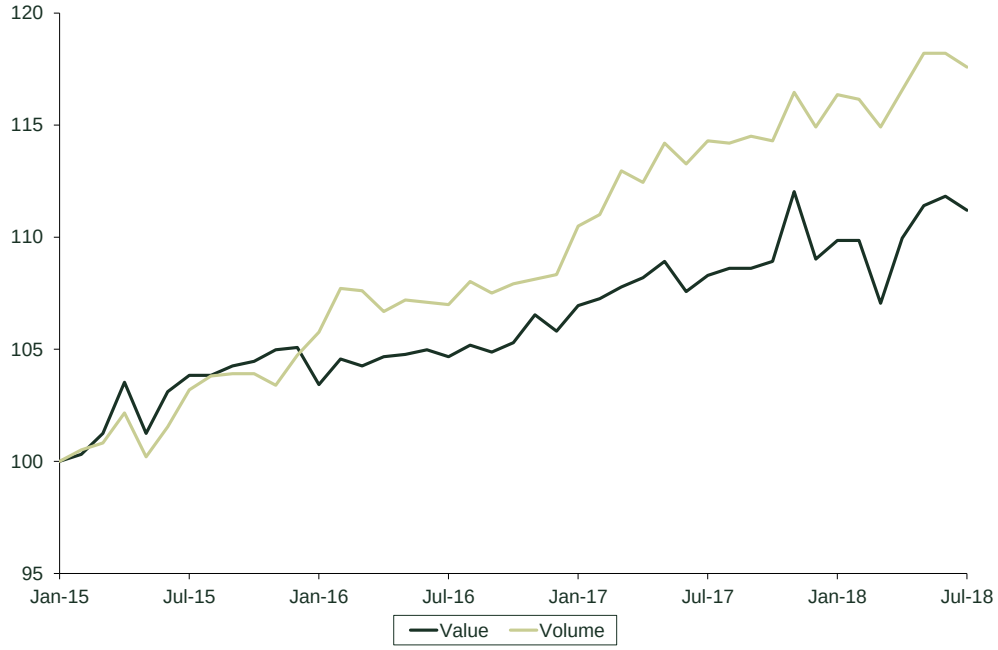
FIGURE 6.4 GROSS NATIONAL DISPOSABLE INCOME (€M, 2015 PRICES)



Source: CSO and daa analysis.

6.46 This has been borne out in strong growth in retail sales at the national level since 2014, as shown in the figure below. Though year-on-year retail sales growth was negative in March 2018, consumer spending as a whole is forecast to grow by 2.6% in 2018, and by 2.5% in 2019.[15]

FIGURE 6.5 IRELAND RETAIL SALES INDEX (SEASONALLY ADJUSTED, JAN 2015=100)



Source: CSO

6.12 Effective commercial management and investment

6.47 We are able to actively influence consumer behaviour and purchasing decisions through optimising our product offering, making effective investment decisions, and adopting efficient pricing strategies. Our commercial revenues—and, in particular, the income per passenger—will be higher where we offer products and services that are closely tailored to the preferences of our users.

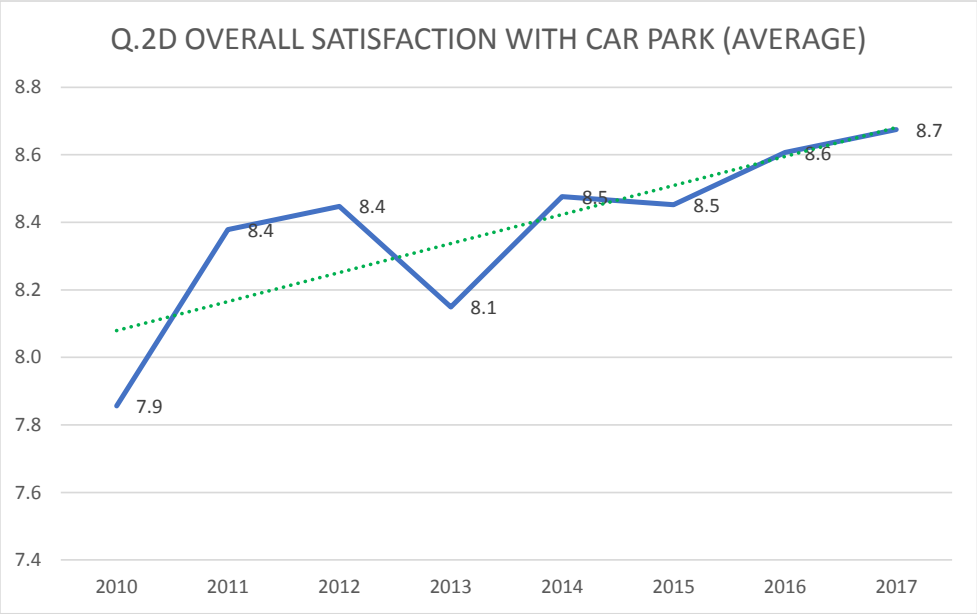
6.48 Across the commercial business segments, we continually strive for improving the level of service. Since 2014, we have introduced a number of new services and innovations, including:

[15] Consumer Market Monitor Q2 2018, Marketing Institute of Ireland and UCD Michael Smurfit Graduate Business School.

- Investment in digital advertising screens across T1 and T2, which now account for more than 20% of our advertising revenues.
- Expansion of our short-term car parking facilities and resurfacing of the LT Red car park.
- Enhancement of our property portfolio (e.g. Skybridge).
- Improvements to our product and brand mix in our retail outlets and across our concessions.
- Active management of floor space—e.g. the T1 Retail Reconfiguration.
- Upgrade of Platinum Services product.
- Investment in the CBP lounge.
- Sponsorship for the fast track facility.

6.49 Our passengers and business partners continue to show high levels of satisfaction with our commercial services despite the challenges that come with rapid passenger growth. For example, passenger satisfaction with our car parks has increased steadily in recent years (as shown in the figure below). Moreover, many of our retail initiatives have been recognised as market leading. ARI was voted Airport Retailer of the Year in 2015, recognising its retail outlets at Dublin Airport and other international airports in the Middle East, Asia Pacific and the Americas. In 2017, ARI won the Partnership Initiative of the Year at the prestigious Frontier Awards and Drinks International Travel Retail Awards for the creation of the Guinness Export House in Terminal 2.

OVERALL SATISFACTION WITH DUBLIN AIRPORT CAR PARKS



Source: daa

6.50 We also use pricing/yield management techniques (such as dynamic pricing and inventory allocation) to better balance supply and demand, which is similar to airline pricing techniques. For example, we have revised the tariff structure for our car parking to better reflect peaks in demand, while continuing to ensure that we provide value for money for users. This has allowed us to continue to grow revenues despite capacity constraints.

6.51 However, there are limits to how far these tools can be utilised going forward, while continuing to offer value for money. We aim to retain our long term value proposition to passengers. Therefore, we do not see further price increases as a core part of our strategy for delivering further revenue growth.

6.13 Performance by business segment

6.52 The table below provides a more detailed commentary on our performance across each of our commercial business segments.

TABLE 6.9 PERFORMANCE SUMMARY BY REVENUE CATEGORY

Business area	daa commentary
Retail	• Traffic growth • Strong growth across our retail offering, including liquor, perfume and cosmetics, and F&B • Ongoing refurbishment of the T2 retail offering to ensure up-to-date retail technologies and branding • Investment in additional retail floor space in T2 • Economic recovery / higher disposable incomes
Commercial property	• Increase in occupancy rates from c.80% to 99% since 2014 • Property refurbishments (including Sky Bridge House refurbishment and the development of new airline accommodation)
Commercial concessions	• Traffic growth and retendered contracts have led to higher income from car rental operators and has increased the attractiveness of Dublin Airport to concessionaires
Car parking	• Traffic growth • Investment in new capacity through extension of the T2 Multi-Story Car Park • Investment in resurfacing of LT Red car park from gravel to a permanent surface, which has improved the overall customer experience • Yield management
Advertising	• Investment in digital advertising infrastructure across T1 and T2 was completed in 2016 and has helped to protect revenue stream from declining static advertising market • Limited short run relationship with passenger volumes
Other revenue	• Traffic growth has contributed to higher revenue from CBP and DATS

6.14 Summary of performance relative to CAR's determination

6.53 Our commercial performance has exceeded the targets set by CAR at the 2014 determination. This has been driven by a combination of volume outperformance, strong macroeconomic conditions, and commercial initiatives actively pursued by Dublin Airport since 2014.

6.54 These commercial initiatives are evidence that the regulatory framework has been successful in generating incentives for us to grow our commercial business, where this is consistent with our wider strategy and service quality requirements. In the longer run, our performance will lead to important price benefits as the higher commercial revenues are used to subsidise future aeronautical charges. There are therefore direct benefits to users from improved commercial performance, which will begin to be seen in the next control period.

6.15 Key themes impacting commercial revenues in the next period (2020-24)

6.55 There are a number of factors that will restrict daa's ability to continue to grow commercial revenues in the next period.

6.16 Supply-side (capacity) constraints

6.56 Across many parts of our non-aeronautical business, there are capacity challenges that mean that revenue growth will be less responsive to increases in passenger traffic.

- **Retail floor space.** In order for an airport to maintain and improve its commercial performance, it is necessary for increases in retail floor space to match increases in traffic. If new floor space does not match traffic growth, and there is no refreshment of the commercial areas, passengers will be more congested, less comfortable and a smaller range of outlets, products and brands will curtail revenue growth.

  We are continuing to take steps to optimise our available floor space but we do not expect to be able to expand the space dedicated to retail in a way that is proportional to forecast passenger growth. Some retail space is likely to be reallocated for other purposes, leading to disruption in the short run and constrained growth in the longer term. It follows that the rate of growth in retail income enjoyed in recent years will not be repeated in the next five years, and a gradual fall in the retail income from each passenger is expected.

- **Car parking.** Car parking operations face significant capacity constraints with occupancy rates for the Short-Term and Long-Term Red car parks averaging c.90%

for 2018. The Long-Term Blue and Green car parks are at capacity over the peak summer months and our forecasts suggest that the frequency and duration of these peak periods will increase. Our CIP includes proposals to invest in 3,200 additional car park spaces. However, these capacity increases will be phased over the next control period and we do not expect the new spaces in our short-term car parks to be available to passengers until 2023. There are also significant risks to the opening dates due to the process of obtaining planning permission, which could delay this new capacity.

- **Commercial property.** Commercial property is now operating at over 99% occupancy and this has resulted in some customer requests for property not being satisfied in recent times. Even where we have been able to find a potential solution to accommodate our customers, it is often not in the optimal location due to the lack of available space. This has resulted in customers having too little space or being split across the campus in a potentially inefficient way. Our CIP contains plans for enhancement of our commercial property through the development of some accommodation on the West Apron, and maintenance of certain units across the campus to comply with building standards. This represents a small increase in our property portfolio and is offset by the fact that a number of commercial properties will be displaced in the next period to accommodate pier development. [redacted]

- **Commercial concessions (car hire).** Car rental facilities are currently operating at capacity, imposing significant operational pressure on car hire companies and impacting on customer experience. Car hire operators have been required to use public car parking spaces to meet demand.

6.57 Our Capital Investment Plan—which we are consulting on with airlines and which is discussed later in this chapter—contains a number of investments intended to alleviate constraints. However, deliverability and stakeholder appetite for additional projects[16] mean that it would not be feasible to undertake the full scale of commercial investments that are needed to meet projected demand. There may be timing issues as to when additional capacity is available (e.g. due to construction and planning lead times). Consequently, we expect supply-side issues to constrain our ability to grow commercial revenues in the next control period.

6.17 Slower volume growth

6.58 The pace of growth of commercial income in this period has to be considered in the context of the rapid, unforeseen traffic growth that has been observed in the past three

[16] We consulted on a number of projects in November 2017 that have since been excluded from the draft CIP due to a lack of appetite from stakeholders, such as the Corballis Park redevelopment.

years. Maintaining traffic growth of this magnitude is not feasible in the medium run. Our central forecasts are for average traffic growth of [redacted] per annum from 2020 to 2024. By comparison, our traffic volumes grew by over 10% per annum between 2013 and 2017.

6.59 For commercial activities for which passenger numbers are an important driver of the volume and/or value of sales, such as retail, we would expect this to result in correspondingly slower growth in commercial income.

6.18 General trends in airport commercial revenues

6.60 Internationally, airports' commercial businesses are under threat as the retail and mobility industries undertake fundamental structural transformations. Standard and Poor's recently reported that duty-free and travel retail sales contracted in 2015 and were flat in 2016, despite buoyant global tourism.[17]

6.61 Commercial activities face competition from a wide range of sources and, in many instances, there is evidence to suggest that these competitive pressures will increase in the medium run.

6.62 In terms of airports' retail businesses, there is strong competition from the high street, online retailers and airlines' on-board sales. The growth in online shopping, in particular, is an increasing competitive constraint. It is estimated that Irish consumers spent €5 billion on online retailing in 2017, and that this has grown at 20% a year over the last three years.[18] Online retailers directly compete for market share but have also contributed to increasingly competitive pricing from high street retailers, who have been forced to offer significant discounts and promotions to protect their own market shares.

6.63 A recent survey by PwC found that 67% of Irish consumers purchased from Amazon in 2017. By comparison, 90% of UK consumers made a purchase from Amazon, suggesting that there is scope for Amazon to substantially increase sales in Ireland in coming years.[19] The trend towards online shopping is likely to have the most significant impact on our Perfume and Cosmetics sales, which account for just under half of Aer Rianta's income.

[17] S&P (2017), 'Are airports ready for airline, retail and mobility disruption', December.
[18] Consumer Market Monitor Q2 2018, Marketing Institute of Ireland and UCD Michael Smurfit Graduate Business School.
[19] PwC, Ireland Consumer and Retail Report 2018

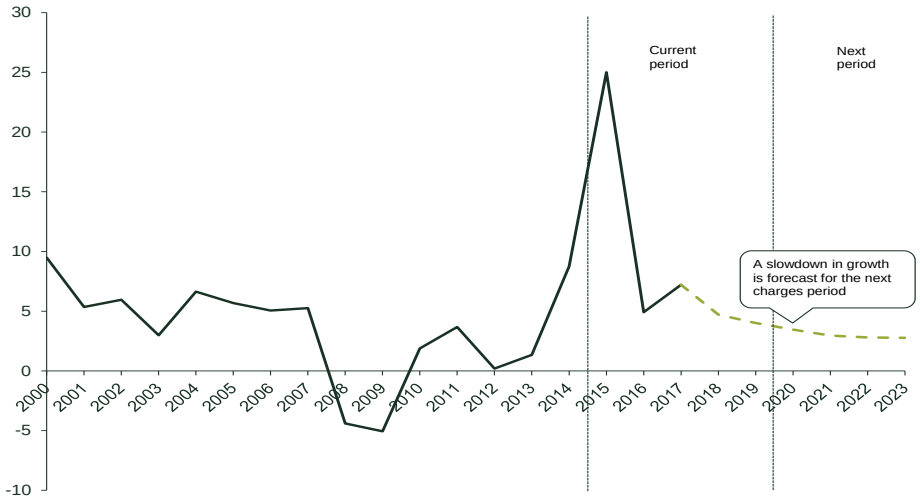
6.64 Our car parking business faces strong competitive pressures from off-airport car parking and other modes of transport, including taxis and bus operators. As highlighted by a recent report by Standard and Poor's, the credit ratings' agency, car sharing represents a new challenge to the airport car parking segment. In many countries, services such as Uber, Halo and Lyft have increased the convenience and, in some cases, reduced the cost of journeys taken by taxi or private-hire car. Market penetration rates for car sharing services have been much smaller in Ireland than in other countries due to legislation on driver eligibility. Should there be a relaxation of this legislation, there could be a large shift in how passengers arrive at the airport and the demand for car parking (as observed in comparable cities in the UK).

6.65 Finally, digital technologies pose a threat to our commercial concessions business. For example, the general decline in cash-based payments and the entry of fintech banks (such as Monzo, Revolut and Starling) offering free foreign exchange[20] can be expected to have a long run impact on the demand for ATM, bank and bureau de change services at the airport.

6.19 Macroeconomic uncertainty

6.66 As set out above, the Irish economy has grown rapidly over the course of this regulatory period, with growth exceeding 25% in 2015 alone. There are signs that growth is now slowing and reverting to long term rates. ESRI forecasts that real GDP growth will equal 8.9% in 2018 and 4.5% in 2019.[21] Looking to the longer term, the latest IMF forecasts predict considerably slower growth of 3.2% per annum on average through to 2023.

FIGURE 6.6 IRISH GDP GROWTH (CONSTANT PRICES, %)



Source: IMF World Economic Outlook, October 2018.

[20] That is, foreign exchange at real-time exchange rates with no commission or transaction fees.
[21] ESRI, Quarterly Economic Commentary – Autumn 2018.

6.67 We note that Irish GDP forecasts are sensitive to the transactions and repatriation of corporate income of a small number of multinational firms, and it is therefore difficult to predict how responsive commercial revenues will be to changes in GDP. However, there are a number of macroeconomic developments that we anticipate could affect our commercial business lines.

6.68 First, there is significant uncertainty as to how Brexit will affect the aviation industry and the Irish economy. It has been widely argued that Ireland faces unique exposure to Brexit due to the high dependency on trade—both in terms of imports and exports—with the UK.[22] The impact of Brexit on the costs of and demand for our commercial activities is difficult to predict. However, there are a number of potential avenues through which Brexit could affect our commercial income.

- Impact on passenger numbers. A hard Brexit could result in traffic restrictions between the UK and EU countries, particularly if the UK were to leave the European Common Aviation Area (ECAA). Given the size of UK inbound and outbound flights as a share of our total traffic,[23] any such restrictions could have a substantial, negative effect on our passenger numbers.

- Reduction in disposable income. Analysis by ESRI suggests that a hard Brexit would increase the cost of living for all households in Ireland by 2% to 3.1% per cent—equivalent to an annual increase of €892 to €1360 per household.[24] We would expect this to have a material impact on disposable incomes and consumer spending on luxury goods, which in turn would be expected to reduce passengers' average spend and potentially reduce the overall volume of leisure travel.

- Increased operating costs. Ireland imports around 15% of its goods and services from the UK and it is expected that the cost of these imports will increase post-Brexit due to higher trade costs (e.g. customs costs as a result of border inspections). If our input costs were to increase as a result, this could result in a lower gross margin.

6.69 Second, movements in exchange rates, whether driven by Brexit or other factors, will affect the competitiveness of our commercial offering. A stronger Euro would be

[22] See, for example, Copenhagen Economics (2018), 'Ireland and the impacts of Brexit: Strategic implications for Ireland arising from changing EU-UK trading relations', prepared for the Department of Business, Enterprise and Innovation.
[23] For example, London to Dublin is currently Europe's busiest route.
[24] Lawless, M. and Morgenroth, E. (2018), 'ESRI Special Article—Brexit and Irish consumers',

expected to make Dublin Airport's retail offering less competitive for non-EU passengers.[25]

6.70 Third, trends from across Europe suggest a slowdown in retail growth could be on the horizon. Recent Eurostat figures show that growth in retail sales, particularly for non-food items, has slowed across the EU28.[26] In Ireland, retail sales declined by 1.9% in March 2018, though there has been a recovery since. The UK retail sector, which often tracks ahead of the Irish economy, has seen a number of high profile failures on the high street and sluggish growth.

6.20 Investment and development opportunities

6.71 While there are constraints on our ability to sustain the rate of commercial revenue growth achieved in recent years, there are also opportunities that we expect to pursue.

6.72 The CIP contains €126m of investment in our commercial business. Approximately 80% of the proposed investment relates to capacity projects.

6.73 The residual 20% of our proposed commercial investment is necessary for required maintenance. This spend is not expected to contribute to revenue growth in the next period but is essential for maintaining our existing service levels and thus sustaining existing revenues.

[25] There is already some evidence of shoppers heading to Northern Ireland to take advantage of the strength of the Euro relative to the sterling. https://www.rte.ie/eile/brainstorm/2018/0820/986279-euro-sterling-northern-ireland-shopping-border-brexit/

[26] https://ec.europa.eu/eurostat/documents/2995521/9105340/4-03082018-AP-EN/4bea9201-cf62-477a-a827-060560d5ebea

TABLE 6.10 PROJECTED SPEND IN ACCORDANCE WITH THE CIP PROPOSED FOR CONSULTATION

	Proposed spend	Project description	Type	Project completion
Retail *(€9.5m)*	€8m	ARI retail development, including: new retail stores at Southern gates and Pier 400 transfer route; T2 Arrivals store upgrade; and new ARI concept stores	Capacity-enhancing	Q1 2020 – Q4 2024
	€1.5m	ARI marketing and media—investment in retail technology initiatives	Capacity-enhancing	Q1 2020 – Q4 2024
Food and beverage *(€8.3m)*	€2.1m	Development of a new flagship 700sqm food and beverage space airside at T1X	Capacity-enhancing	Q1 2022
	€3.2m	Enhancement of food and beverage offering post CBP, with construction of a new food and beverage unit adjacent to 51st&Green	Capacity-enhancing	Q4 2022
	€3m	New kitchen in the space currently occupied by Slaney/Chocolate Lounge T2 IDL	Capacity-enhancing	Q2 2021
Commercial property *(€12.5m)*	€4.5m	Development of accommodation and welfare facilities on the West Apron	Capacity enhancing	Q2 2023 (phased)
	€8m	Refurbishment of commercial property across the campus to maintain building standards	Maintenance	Q1 2020 – Q4 2024
	€15.0M	Office Consolidation	Maintenance & Capacity enhancing	Q1 2023
Commercial concessions *(€18.1m)*	€14.0m	Development of hire car facilities with 3000 additional car rental spaces Additional maintenance and service facilities (including fuel pumps, maintenance bays and customer counters)	Capacity-enhancing	Q2 2022
Car parking *(€42.9m)*	€5.9m	Extension of Express Red Long Term Car Park (Eastlands) on a green field site to create an additional 2000 spaces	Capacity-enhancing	Q1 2022
	€18.8m	Extension of T1 Multi-Storey Car Park Block B, creating an additional 600 spaces	Capacity-enhancing	Q3 2023
	€15.1m	Extension of Terminal 2 Multi-Story Car Park, creating an additional 680 spaces	Capacity-enhancing	Q1 2024
	€3.1m	Maintenance and upgrading of our existing car park management system	Maintenance	Q1 2022
	€6.0m	Additional Staff Car Parking Spaces	Capacity-enhancing	Q2 2021

Advertising	€2.2m	Expansion of digital advertising infrastructure with large LED digital formats in T1 and T2 Upgrade and expansion of existing AerPods	Capacity-enhancing	Q3 2021
Other (DATS) *(€15.2m)*	€1.7m	Enhancement to existing fast track facility and introduction of a dedicated fast track arrivals facility	Capacity-enhancing	Q1 2020 – Q4 2024
	€11.4m	Increase lounge capacity through investment in Pier 1 Lounge, mezzanine level lounge in T2 and a T2 Arrivals lounge Refurbishment of T2 Lounge and 51st&Green lounge	Capacity-enhancing	Q1 2020 – Q4 2024
	€2.1m	Upgrade of platinum services (lounges, security screening and platinum suites)	Capacity-enhancing	Q3 2023

6.74 The proposed level of investment in commercial assets represents a step change from previous periods and reflects the investment backlog created by the unanticipated growth in passenger numbers over the last four years and the need to release additional capacity to facilitate this demand.

6.75 Despite the proposed increase in investment required, commercial projects account for a disproportionately small amount (c.6.5%) of the total value of the CIP. We do not expect this level of investment to fully alleviate capacity constraints.

6.76 Consultation with airlines is a core feature of our capital planning process and gaining airline support is critical in order for investment. Airlines have indicated that they do not support some of the potential commercial projects we have considered (e.g. Corballis Park) and we have therefore excluded these projects from the CIP. Based on our discussions to date, there has been no appetite from airlines to fund additional commercial revenue projects.[27]

6.77 For the capacity-enhancing investments that are included in the CIP, the additional capacity will be released over a number of years and, in some instances, will not generate additional commercial revenue until 2023 or 2024 of the price control. For example, as shown in the table above, we do not expect our multi-story car park

[27] Where airlines do not support a commercial investment, we have the option to proceed with projects at risk.

projects to be complete until the end of 2022, with the revenue impact first seen in 2023.

6.21 Summary of key themes affecting commercial revenues in the next period

6.78 The construction of Terminal 2 and other enhancements across the Dublin Airport campus have ensured that capacity has been sufficient to meet growing demand from passengers and businesses alike. We are now facing capacity issues across our commercial portfolio that, combined with a slowdown in macroeconomic growth, are expected to dampen future growth in commercial income.

6.79 Importantly, the upside potential for growth is limited by the capacity constraints identified above, but the downside risk is both significant and uncapped. In particular, the risks associated with events such as Brexit are firmly tilted to the downside. This means that the distribution of outcomes is asymmetric and negatively skewed. In such a situation, it is appropriate to be conservative when estimating future growth. In addition, the balance of risk is to the downside and uncapped. The projections do not include the potential for a significant economic shock such as Brexit.

6.80 While we have identified areas where there is scope for further growth, our forecasts reflect these forward-looking challenges, and we consider that an assessment of these factors should be integral to CAR's methodology for setting commercial revenue targets.

6.22 Relationship with other building blocks

6.81 There is a close relationship between our commercial income projections and other building blocks within the regulatory proposition. There is therefore a need for consistency across these areas.

6.82 First, a number of our commercial revenue lines are linked to passenger volumes and therefore our traffic projections are an important input into our commercial revenue forecasts. As discussed in Section 4, we forecast that passenger volumes will grow to [redacted] These traffic projections are the basis for these commercial revenue forecasts.

TABLE 6.11 PASSENGER PROJECTIONS

[redacted]

6.83 Second, the proposed capital programme has a direct impact on our commercial offering as it influences the scope, quality and availability of our commercial facilities.

- A number of the projects in our CIP are designated as commercial revenue projects as they are being undertaken to support our commercial operations, as opposed to our aeronautical business. As set out above, we are proposing over €126m of investment to support our commercial business. Importantly, if any of these capital projects were not to be approved, or if additional projects were to receive the support of airlines, this would have an effect on our forecasts.
- The majority of the CIP comprises projects that are being pursued to support the needs of the aeronautical business. These projects will also affect commercial revenues if they lead to displacement of commercial space or disruption. It is important that these spill over effects are accounted for when setting commercial revenue targets. We have prepared our commercial income forecasts on the basis that we receive CIP approval for the €126m commercial projects. We have included commercial revenue uplifts for these projects.

6.84 Finally, there is a link between operating expenditure and commercial income. All else being equal, we would expect commercial revenues to be higher, the more we spend on commercial opex. Currently, the operating costs for our commercial business are assessed separately from our commercial income projections.[28] This creates a risk that the dependencies between the amount of commercial opex we incur and the amount of commercial revenue we generate are not fully accounted for when CAR sets regulatory targets (and subsequently assesses our performance ex post). For example, we may wish to pay higher salaries than benchmark organisations in order to employ highly-skilled staff that are able to generate a higher commercial margin, which would be in line with an efficient market outcome. However, with separate assessment of opex and commercial revenues, this may lead CAR to conclude that our proposed opex is inefficient, while still setting the commercial revenue target at the higher level.

6.85 An alternative approach would be to consider operating expenditure and commercial income together by setting a target level of Earnings before Interest, Taxes, Depreciation and Amortisation (EBITDA) for each of our commercial activities.[29] In our response to CAR's Issues Paper, we set out that we consider it is prudent for reviews of commercial revenue to be conducted on an EBITDA basis to ensure that revenues and costs are considered together. This is more closely aligned with the operating model for our commercial business, which operates on a Profit & Loss basis.

[28] Our retail revenues are presented net of the cost of goods sold but not of the operating costs.

[29] This would mean that the opex building block would solely include aeronautical opex.

6.86 As per the requirements in previous years, we have provided our baseline projections to feed into both the opex and commercial revenue building blocks but would nonetheless request that CAR takes a holistic approach to assessing these projections—i.e. considering the opex impact of any adjustments to our commercial income forecasts, and vice versa.

6.23 Commercial revenue strategy and forecasts

6.87 This section outlines the commercial revenue forecasts for 2019 to 2024. In presenting our forecasts, we have used commercial revenue categories that are consistent with CAR's categories. We have separated out CBP revenues.

6.24 Forecasting approach

6.88 We have prepared our forecasts on a bottom-up basis building on our expert knowledge of our commercial business, assessment of the unique set of challenges that we will face in 2020-24 and analysis of wider trends in each of our business segments. For each of the activities we have considered:

- The base year position. As our starting point, we have used our latest estimate of 2018 revenues as the base year for forecasting our commercial revenues. However, in some instances we have adjusted this figure to take account of one-off revenue items that will not be replicated in subsequent years.
- Underlying growth forecast. For each revenue category, we have undertaken an assessment of the key revenue drivers (both demand-side and supply-side factors), and have considered the opportunities and constraints on growth. We have used this assessment to establish an underlying growth forecast for each revenue category.
- Uplifts for positive supply side effects, including capital investments. A large portion of the commercial projects included in the proposed CIP will generate additional commercial revenues in the future. We have applied uplifts to our forecasts to take account of these new revenue streams (starting from the year following the completion of the project).
- Downward adjustments for negative supply side impacts. We have made downward adjustments where there is an expected temporary disruption or permanent displacement as a result of capital investment or other decisions.
- Key risks. The revenue projections reflect an appropriate balance of upside and downside risk. We have assessed the key risks for each business revenue line and the potential distribution of outcomes. Where we have a good idea that an event will materialise, we have included this in our central forecast.

6.89 Based on our assessment of the above factors, we have developed revenue forecasts for each of the eight categories of commercial revenue for 2020 to 2024. Each forecast is presented in 2018 prices.

6.90 Further detail of these forecasts is provided below.

6.25 Forecast: Retail

6.91 We include direct sales by ARI and income from retail concessionaires. F&B concessionaire income is forecasted separately (see below).

Relevant trends

6.92 Passenger numbers are an important driver of retail revenues and our retail revenue forecasts need to reflect the projected growth in passenger volumes in the next period. We are continuing to improve our product and brand mix to ensure that we offer our passengers the best services. Our revenue forecasts build in year-on-year sales growth to take account of increased passenger volumes and these ongoing improvements to our retail offering.

6.93 Our retail outlets increasingly face competition from online and high-street stores (such as Brown Thomas and Arnotts), which are able to offer greater convenience, have access to a wider range of brands and are increasingly price competitive.[30] In this context, market research shows that consumers place high value on convenience and the customer experience. Our travel retail licence prevents us from competing directly with online retailers by offering a home delivery services. This represents a challenge to attracting customers and means that enhanced services, such as 'click & collect' and 'shop & collect', will be an increasingly important feature of our retail offering. This affects revenue in terms of volume and pricing, and costs in terms of the increased investment required to attract passengers to shop at the airport.

Challenges for bricks and mortar retail

Across Europe, there are signs that many traditional retail outlets are under pressure from factors such as internet retailing, tougher competition and changing consumption patterns.

Since 2016, a number of high-street brands—including BHS, House of Fraser, Maplin, Orla Kiely, Poundworld and Toys 'R' Us—have gone into administration. Other large retail chains (such as Debenhams, Homebase,

[30] For example, these stores have been able to gain much faster access to perfume and cosmetics brands such as Charlotte Tilbury, which launched in 2013.

Marks and Spencer, and New Look) have announced significant restructurings resulting in store closures.

The competitive pressures on retail outlets has been particularly pronounced in the UK, where internet retailing is more widespread than in any other EU country.[31] As internet retailing becomes more widespread in Ireland, we would expect to observe similar trends in the Irish bricks and mortar retail sector.

6.94 There is a growing threat of competition from airlines using their customer relationships to drive ancillary revenues from retailing. For example, Ryanair has announced plans to become the 'Amazon of the airline industry', a one-stop shop for travel, selling not just flights, but rooms, transports, restaurant and event bookings and ancillary products such as sun glasses and sun cream.' It has outlined its ambition to become a global travel retailer, whereby flights become the 'bread and milk in the supermarket' and customer data is used to cross sell and upsell other travel related products.

6.95 Tobacco and alcohol sales currently account for around a quarter of our retail sales. We expect continuing pressure on tobacco sales as a result of both supply side and demand side factors. Smoking prevalence rates continue to fall in Ireland and Tobacco Free Ireland has set a target to reduce this from 22% of the population in 2017 to under 5% by 2025.[32] Consumption of cigarettes has fallen steadily in recent years. ITMAC estimates that overall volume of cigarette and rolling tobacco sales declined by 21% between June 2011 and June 2016.

TABLE 6.12 CONSUMPTION OF CIGARETTES IN IRELAND (12-MONTH ROLLING AVERAGE)

	June 2011	June 2012	June 2013	June 2014	June 2015	June 2016
Volume (million)	4,196	3,742	3,510	3,276	3,118	3,018
Year-on-year change	-4.5%	-10.8%	-6.2%	-6.7%	-4.8%	-3.2%

Source: ITMAC

6.96 This trend is not unique to Ireland and is observed across other markets served by Dublin Airport. For example, data from the Office for National Statistics shows that the proportion of smokers in the UK fell from 20.2% of the population in 2011 to 15.1% in 2017.[33]

[31] Eurostat, E-commerce statistics for individuals, 2017.
[32] https://health.gov.ie/wp-content/uploads/2014/03/TobaccoFreeIreland.pdf
[33] ONS (2018), Adult smoking habits in the UK: 2017, 3 July.

6.97 Ireland is now ranked second out of 34 European countries in terms of tobacco control initiatives,[34] and further interventions designed to control tobacco consumption could be introduced with the aim of meeting the 5% target. Our forecasts take account of the general decline in tobacco consumption in the markets we serve, but we have not modelled the impact of any specific tobacco control initiatives. Any such initiatives are therefore an additional risk to our projections.

6.98 The passing of the Public Health (Alcohol) Act in October also paves the way for additional measures around alcohol sales, including mandatory health labelling on alcohol products, advertising restrictions, minimum unit pricing and requirements to segregate alcohol products from other products.[35] As for tobacco, we have not included the impact of any such initiatives in our central projections but note that they are a key risk to our retail revenues.

Investment projects

6.99 We are seeking to support revenue growth by investing €8m on refurbishing, upgrading and expanding existing retail offerings across both terminals and associated piers, and €1.5m on retail marketing and media installations. This will include:

- New retail stores serving the Southern gates and the Pier 400 transfer route, and new ARI concept stores.
- Expansion and redevelopment of the Pier 100 store.
- Upgrades to the Pier 400 (CBP) and T2 Arrivals stores.
- Upgrades to the perfume and cosmetics brand mix.
- New media installations and retail technology initiatives to provide an improved customer experience.

6.100 However, our CIP also contains a proposal to reallocate a number of retail units in T1 for repurposing as a flagship F&B unit from mid-2020.[36] This will reduce the total floor space that is dedicated to retail by at least 500m^2. (We are pursuing this reallocation with a view to achieving a higher margin through an enhanced F&B offering and it is therefore offset by an uplift to our F&B forecast outlined below.)

Projections

6.101 In the current price control period, increases in direct retail revenue have kept pace with passenger growth. [redacted]

[34] https://health.gov.ie/healthy-ireland/tobacco/tobacco-control-legislation/
[35] Public Health (Alcohol) Act 2018, Number 24 of 2018. Available at: https://data.oireachtas.ie/ie/oireachtas/act/2018/24/eng/enacted/a2418.pdf.
[36] This relates to the units currently occupied by Superdry, Pandora, Parfois and Rolling Luggage.

6.102 These projections are based on the following assumptions.

[redacted]

6.103 Overall, we are projecting that retail revenues will [redacted] Direct retail sales from existing outlets are projected to [redacted].

TABLE 6.13 PROJECTED RETAIL REVENUES 2019-2024

[redacted]

Key risks to these projections

6.104 There are a number of key risks that, were they to materialise, would affect our ability to meet these projections. The projections outlined above do not take include an explicit adjustment for these risks.

- Any deviation from our passenger forecasts would impact this revenue stream.
- Our central forecasts are based on assumptions around how changes to passenger mix and demographic, and operational changes as the airport becomes increasingly congested, will affect passenger average spend. If the outturn impact were to differ from these assumptions, this would affect commercial revenues.
- Brexit would negatively impact our revenues from UK passengers if it leads to a reduction in the number of passengers flying to Dublin or reduces the propensity to spend. For example, a further depreciation of the sterling, and an increase in volatility, as a result of Brexit would affect the price competitiveness of our products for UK passengers.
- The introduction of new measures aimed at reducing alcohol and tobacco consumption would negatively affect revenues from these categories.
- Increased churn rates of brands/products due to changing customer demands may negatively impact revenues due to the long lead times involved in getting new brands in store relative to online or high-street competitors.

TABLE 6.14 KEY RISKS ASSOCIATED WITH RETAIL PROJECTIONS

Accounted for in forecasts	Additional risk
Uplift for new retail projects	Changes in the timeline, or cancellation, of retail projects
Displacement of retail floor space from reallocation to F&B	Displacement of retail floor space due to any unplanned operational procedures or investments
Declining trend in tobacco sales	Legislation that places additional restrictions on the sale of tobacco
Traffic growth in line with other areas of the regulatory proposition	Volume out/under-performance
Increase in transfer passengers	Other changes to passenger mix
Increase in competition from online and high-street retailers	Changing customer demands
	We have assumed that any improvements in the speed of security clearance from moving passenger screening to the mezzanine level will be offset by other factors, such as the additional time and distance to reach pre-boarding zones, such that passenger dwell times will not change materially.

6.26 Forecast: F&B

6.105 Dublin Airport has an established F&B offering, with 13 concessionaires operating F&B units across the airport. F&B is a key driver of passengers' overall airport satisfaction.

Underlying revenue growth

6.106 F&B revenues are linked to passenger numbers, the amount of floor space allocated to F&B units, the quality of the F&B offering provided by concessionaires, and the terms established in contracts. Despite increased passenger numbers, passenger average spend at Dublin Airport's F&B units has flatlined since 2015 due to capacity constraints. We have therefore assumed that passenger average spend at our existing F&B units will remain flat in real terms and revenue growth will be driven by increases in passenger numbers.

Investment projects

6.107 In addition to this, we are looking to make significant improvements to our current F&B business in the next control period to bring our product into line with international standards and deliver improvements to overall levels of airport satisfaction. The T1 International Departures Lounge is currently under catered for F&B with a decrease in

penetration levels in peak summer months. A particular challenge is the lack of production facilities, which limits the ability of F&B providers to prepare fresh food.

6.108 We are therefore proposing to undertake €2.1m of capital investment to develop a new flagship 700m^2 F&B concession space at T1X with new storage facilities. This will involve a reallocation of 500m^2 of retail space (as discussed above) and 200m^2 of passenger seating space. The new shell unit will include a 300m^2 kitchen allowing the concessionaire to produce fresh food and thereby delivering an enhanced F&B experience for passengers. We expect this unit to be operational in early 2022.

6.109 Our CIP contains a further €3.2m to enhance the F&B offering for post-CBP passengers. The CBP facility currently has a small amount of space (168m^2) allocated to F&B, with no kitchen or storage facilities. Given the neccessity for passengers to go through two screening processes there is a higher dwell time in the area and as such the allocation of F&B space should be treated the same as the IDL. This is roughly 60% below industry benchmarks and we forecast we will need 700m^2 of F&B space by 2024 (i.e. an additional 530m^2) to meet growing numbers of passengers using the CBP facility. We have recently experienced declining penetration rates. We are therefore proposing to convert underutilised ramp accommodation adjacent to 51st&Green into a new F&B unit. This is expected to complete in Q4 2022.

6.110 Finally, we propose to invest €3m to develop a new kitchen at the Slaney Bar location in the T2 IDL. This project will create a shell and core kitchen space with landlord services to provide an enhanced food offer for passengers.

Projections

6.111 We have based our F&B projections on the following assumptions.

- Revenues from our existing F&B units will grow in line with passenger numbers with capacity constraints in a number of units expected to be offset by growth in average transaction value (ATV).
- The investments outlined in the CIP will go live in 2022. These investments will lead to an uplift of [redacted]
- [redacted]

6.112 Overall, we forecast that revenues will [redacted]

TABLE 6.15 PROJECTED F&B REVENUES 2019-2024

6.113 The key risks to these projections are summarised in the table below.

TABLE 6.16 KEY RISKS ASSOCIATED WITH F&B PROJECTIONS

Accounted for in projections	Additional risk
Revenues from existing F&B units forecast to increase at the same rate as passenger growth	Passenger numbers differ from forecast.
Uplifts for new and enhanced F&B units	These revenue forecasts are contingent on additional capacity. If there are changes to the project timelines or projects do not receive approval, we will not be able to convert passenger growth into additional revenue.

6.27 Forecast: Commercial property

6.114 Our commercial property business has a portfolio of approximately 150,000m^2. It has enabled airlines and aviation related businesses to grow their operations but is now at full capacity.

Underlying revenue growth

6.115 The key determinants of the income we derive from commercial property are the size of the commercial property portfolio, occupancy rates and the property rents established in contracts. Revenues are therefore dependent on prevailing conditions at the time of rental reviews and there is a limited degree of variance once contracts have been agreed. As a result, there is no relationship between passenger growth and property income. This is borne out by performance in the current control period—despite the large increase in passenger numbers, growth in commercial property revenues has slowed down as a result of significant capacity constraints.

6.116 We forecast that this will continue into the next control period. In particular, we are constrained by the following factors.

- There is no scope to increase occupancy rates. As of November 2018, the occupancy rate of our commercial property portfolio exceeds 99% and hence we

are effectively already operating at full capacity in this business segment. Over the last year, we have turned away more than 15 customers due to a lack of available accommodation. Consequently, we will not be able to grow revenues by increasing occupancy.

- A large portion of revenues are fixed by virtue of existing leases. A number of leases were recently agreed (e.g. Skybridge, ATC Tower and Fuel Farm) and there is little opportunity for uplift in the near future in these areas, beyond the step-ups already established in these contracts (e.g. CPI indexation). We estimate that c. 25% of our income for the next period is already fixed and, for these leases, our forecasts are based on the contractually agreed terms with the tenants.
- Part of our commercial property space will be displaced. The CIP will have a negative impact on our commercial property revenue with the proposed south apron redevelopments resulting in the displacement of a significant number of commercial property units, [redacted]

Investment projects

6.117 While these constraints will limit the potential for revenue growth, we are proposing to undertake a number of investments that will contribute to commercial property revenues.

- We plan to invest **€4.5m in new accommodation and welfare facilities in the west apron.**
- €8m has been requested for refurbishment of commercial property across the campus to maintain building standards and ensure accommodation is high quality and fit-for-purpose. This investment is needed **to address our aging portfolio of property and is intended to maintain existing revenue levels, rather than driving incremental revenue.**
- €15m has been requested for an Office Consolidation which would [redacted]

6.118 We also forecast some revenue uplift for the leases that will come up for renewal between now and 2024. In Q3 2018, prime office rates in Dublin city centre stood at €646 per square metre per annum, more than double the level seen in 2011, while vacancy rates have continued to fall.[37] Prime rents in suburban areas have remained stable. Recent analysis suggests that the outlook for the commercial property market

[37] Cushman & Wakefield (2018), 'Dublin Office Market Q3 2018', November.

remains positive (though we note that recent market activity has been driven by the tech sector, which is of less relevance to our property portfolio).[38]

6.119 While these revenue uplifts will help to sustain overall commercial property revenues they will not be sufficient to offset the displacement of income from the south development. Consequently, this revenue line is expected to fall despite traffic growth.

Projections

6.120 Based on these considerations, our approach to modelling commercial property revenues is as follows.

- We have used our latest estimate for 2018 as our baseline revenue.
- For contracts that are not up for renewal before 2024, we have incorporated the contractually agreed payments into the forecast (based on assumed CPI inflation).
- For contracts that are up for renewal,
- We have included CUPPS revenue at

o

revenue is included for the Corballis Park project.

6.121 The below table shows the resulting income forecasts. Commercial property revenues are projected to

Table 6.17 Projected Commercial Property Income 2019-2024

[38] See, for example, Society of Chartered Surveyors Ireland (2018), 'Annual Commercial Property Review & Outlook 2018'; Cushman & Wakefield (2018), 'Dublin Office Market Q3 2018', November.

6.122 The table below sets out the key risks to these forecasts. It is worth noting that the current high occupancy rates mean that there is limited upside potential (but we retain the downside risk of occupancy levels falling in the event of a downturn).

TABLE 6.18 KEY RISKS ASSOCIATED WITH COMMERCIAL PROPERTY INCOME

Accounted for in projections	Additional risk
Uplifts for lease renewals	A downturn in commercial property rents would affect the revenue uplift from lease renewals
Uplifts for West Apron Development	Delays to, or lower than planned occupancy rates following, the new West Apron development would result in a smaller revenue uplift from this project.
Displacement of commercial property due to north and south apron developments	Additional displacement due to unplanned operational procedures or investments
	Corballis Park has not been included in our central forecasts. Were this to proceed, there would be an additional uplift to commercial property income.

6.28 Forecast: Commercial concessions

6.123 Our commercial concessions business continues to comprise car hire, banking, bussing, telephony and a small amount of other income. Car hire is by far the biggest of these components (c. 70%) and has grown strongly over the past four years, contributing to the overall increase in concessions revenue.

FIGURE 6.7 *SPLIT OF COMMERCIAL CONCESSIONS REVENUE, 2018*

6.124 Our commercial concession contracts typically establish a guaranteed minimum sum and a revenue share component where pre-specified thresholds are met. Our revenue is therefore determined by the contractual terms agreed at the time concessions are tendered and the concessionaires' subsequent performance. This means that there is a

relationship between this revenue stream and (forecast and outturn) passenger numbers—i.e. concessionaires' expectations regarding passenger growth will influence the minimum sums agreed at the time of contracting and actual passenger growth will affect the size of any revenue share. However, a range of other factors are important, including trends in demand for car hire, busses, and financial services.

Underlying revenue growth

6.125 Our revenue forecasts for this business segment are highly dependent on the outcome of contract retendering processes, many of which are due to take place in the next 18 months.

TABLE 6.19 EXPIRATION OF KEY CONTRACTS

[redacted]

6.126 [redacted]

TABLE 6.20 TOTAL TURNOVER AND FEE INCOME 2011-2018

[redacted]

6.127 Revenues from financial services concessionaires (banking and foreign exchange) have grown in the current period as a result of passenger increases. The current Bank of Ireland contract is due to expire in [redacted], and the ICE foreign contract in [redacted] The recent growth rate is sustainable beyond this control period as slower traffic growth and declining demand for banking and currency exchange services are expected to affect concessionaire's gross turnover.

6.128 There is a general move towards cashless transactions with an increasing number of payments made by card and smartphones both in Ireland and other economies internationally. This trend is particularly pronounced among younger consumers.[39] Moreover, there has been widespread entry into the banking sector on the back of

[39] Cashless Society, Foresight Factory Report 2018

advances in financial technology, with a number of companies (such as Monzo, Revolut and Starling) offering consumers free foreign exchange.

6.129 Dynamic Currency Conversion (DCC) charges are currently set at 7% by the Irish Central Bank. Other European countries have no regulation around DCC charges and in some countries they are over 20%. Negative publicity regarding high DCC charges across Europe has resulted in trend of declining withdrawals at ATMs which we have experienced in Dublin. Cross-border payment fees are currently under review by the European Parliament in relation to the need for transparency and a possible cap of charges speculated to be at [redacted] from current levels. Should this be approved, commercial revenues associated with this business would fall.

6.130 Such developments are expected to put pressure on consumer demand for ATM, bank and bureau de change services at the airport and, indeed, we have observed a decline in ATM usage at the airport in recent months with ATM volumes down 13% YOY in H2 2018. Given these trends, we have assumed that revenues from financial services [redacted]

6.131 Our current bussing contracts are due to expire in [redacted]. The contracts are fixed fees based on an estimated number of departures. This means that once these contracts are agreed, the revenue they generate does not vary with passenger numbers [redacted]

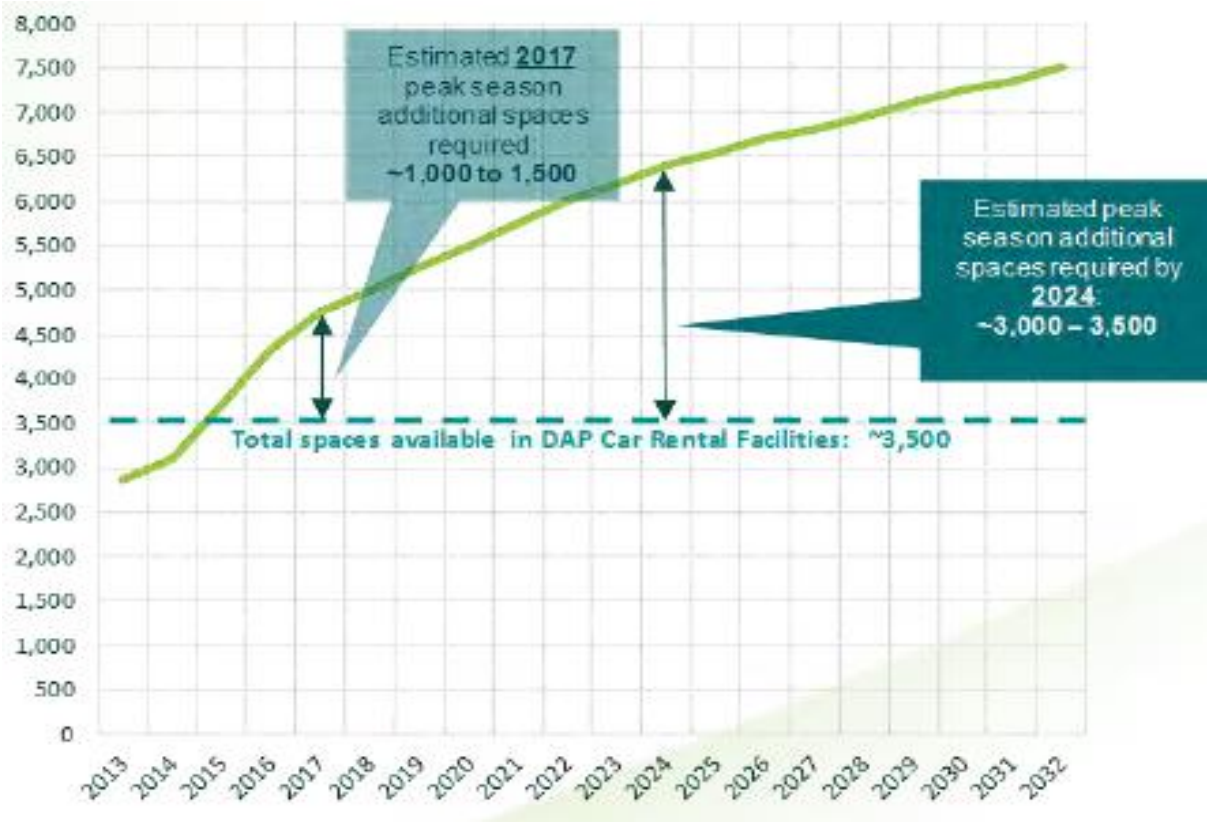
6.132 A further source of concessions income is revenue from telephony. Historically there have been four telephony companies with antennae equipment on the T1 roof, and utilising the DAS system in T2. However, there has recently been consolidation in the market with Three taking over O2. A new licence was signed with Vodafone in October 2017 and agreements were recently reached with Eir and Three. Operators' revenues have fallen in recent years as new legislation and changing consumption behaviours have forced the operators to change how they sell to their customers with roaming charges no longer applicable and customers purchasing pre-paid packages, rather than opting for pay-as-you-go charges. [redacted]

Investment projects

6.133 The last investment in car rental facilities was in 2007. Car hire is now experiencing capacity constraints across most facilities. This adversely impacts the customer experience (e.g. due to longer queue times) and operators have been required to use public car parking spaces and additional offsite facilities to meet demand. By 2022, exceed capacity across all facilities. Constrained facilities lead to inefficient operations and higher costs for car rental companies, as well as lower levels of satisfaction for customers.

6.134 Car parking spaces are the biggest constraint and inhibitor of growth. In the 2017 peak season, we exceeded capacity by approximately 1000 to 1500 car parking spaces. We estimate that by 2024, we will exceed capacity by 3,000-3,500 spaces (as shown below).

FIGURE 6.8 TOTAL SPACES TO ACCOMMODATE CAR RENTAL VEHICLES DURING PEAK SEASON



6.135 The CIP includes a proposal to expand the existing car hire facilities at Dublin Airport with 3000 additional car rental spaces and enhanced facilities for car hire operators. This investment is targeted at alleviating the capacity issues experienced in 2018, improving the customer experience and reducing car hire companies' operating costs. We anticipate that an investment of €14m would generate additional revenue of [redacted] though the revenue uplift would be phased over the previous two years). This uplift is conditional on facilities being delivered on time. Without this investment, car rental operators will have to invest in supplementary facilities, increasing the risk of operators moving offsite and diluting our income.

Projections

6.136 The table below shows our forecasts for commercial concessions income. These forecasts are based on:

- Using 2018 revenues as a baseline.

[redacted]

- The investment in car hire facilities will lead to revenue uplifts of [redacted]
- Aside from the investment in car hire facilities, we do not anticipate changes to the infrastructure available for commercial concessions. No further uplifts are made for capital investment.
- [redacted]

[redacted]

Table 6.21 Concessions income per passenger 2019-2024

6.137 The table below outlines summarises the key assumptions captured in the modelling and the key risks to the projections.

[redacted]

TABLE 6.22 KEY RISKS ASSOCIATED WITH INCOME FROM COMMERCIAL CONCESSIONS

[redacted]

6.29 Forecast: Car parking

6.138 Car parking revenues have performed strongly in the current control period, on the back of volume growth and effective yield management. This has been supported by investment in extending the T2 Multi-Story Car Park and resurfacing the LT Red car park.

Underlying revenue growth

6.139 In our opinion there is a relationship between passenger numbers using the airport and unconstrained demand for car parking facilities. Of particular relevance are Irish residents who make up the majority of passengers arriving at the airport by private car. Approximately half of Irish resident passengers arrive at the airport by private car and around 25% park at the airport (with 25% being dropped off). This has stayed relatively constant over the past few years. We expect that public transport will grow into the future with the introduction of the National Transport Authority's Bus Connects project and the planned Metro development in coming years.

6.140 Given the forecast growth in passengers in the next period, we expect there to be an increase in unconstrained demand for car parking facilities.

6.141 However, there are supply side constraints that will affect our ability to meet this demand in the short run. All of our car parks are at capacity over the peak summer months and the Short-Term and Long-Term Red car parks are averaging around 90% occupancy for the full 2018 calendar year.[40] Our forecasts indicate that the frequency and duration of these peak periods will increase.

6.142 Importantly, the occupancy rates cover all times of the week so, for example, with 90% occupancy the car parks may be full for the majority of the week but have spaces on Sunday evenings when demand for car parking spaces is lower. This means that we are capacity constrained at levels below 100% as we cannot offer the services that customers want at all time periods. Without capacity increases, we will only benefit from passenger growth if this occurs at the times of the week where demand is currently lower (e.g. Sunday evenings).

TABLE 6.23 SHORT AND LONG-TERM OCCUPANCY RATES JAN 2012-OCT 2018

[redacted]

[40] The occupancy rates cover all times of the week so, for example, with 90% occupancy the car parks may have spaces on a Sunday night but be full at other times in the week. This means that we are capacity constrained at levels below 100% as we cannot offer the services that customers want at all time periods.

6.143 As supply side constraints have taken hold, we have partly maintained revenue growth from our car parking operations through effective yield management. We sell parking through variable pricing model to ensure that we price to fill the asset. This has resulted in higher prices for car park users and our latest survey evidence shows that customers' perception of value for money has fallen sharply (from 8.6 in Q2 2017 to 8.1 in Q2 2018).

6.144 Such yield management needs to be used cautiously to ensure that we do not undermine our value proposition and, in light of strong competition from other modes and direct car parking competitors (e.g. Aircoach and QPark), risk pushing passengers towards alternatives. This is particularly relevant given the threat of entry from disruptors (such as Parkpnp) and the expected increase in competition from public transport.

6.145 As we continue to seek to provide users with services and facilities that provide good value for money, we do not see further real terms price increases as a core part of our forward strategy. We are selling at known price elasticity points, meaning that higher increases will lead consumers to choose alternative modes of travel. This is not a sustainable model—a similar approach was used in 2008-2010 and resulted in a significant drop in car park revenue, which outpaced the decline in passenger numbers.

Investment projects

6.146 In light of the growth in unconstrained demand, we are planning major development projects aimed at increasing capacity and improving service levels for car park users. In terms of new capacity, there are three projects within the CIP, costing a total of €39.8m.

- Extension of the Express Red Long Term Car Park (2000 additional spaces).
- Extension of T1 Multi-Storey Car Park Block B (600 additional spaces).
- Extension of T2 Multi-Storey Cark Park (680 additional spaces).
- New Staff Car Park (2000 additional spaces).

6.147 These projects will provide much needed capacity (5280 additional spaces), which over time will allow us to grow our car park operation and generate additional revenue. These capacity increases are essential to growing sustainable revenue. Our current CIP timelines are for the extension of the LT Red car park to be completed by mid-2021, with the extensions to the ST car parks following in late 2022.

6.148 In addition to these capacity-focused projects, we are proposing to spend €3m on upgrades to modernise our car parking management system across all our short term and long term car parks. The existing car park management system was introduced in 2006 and is now at end of life. It will be replaced with enhanced software that has the

potential to deliver a number of benefits for operation, management and users. The project will involve the replacement of entry and exit terminals, pay stations, barriers, cameras and the provision of new sensor technology hardware. This investment will allow us to connect our passengers to our service using technology (e.g. by allowing passengers to interact with the service via their phone), increasing convenience and improving the passenger experience. This will help to improve and enhance the overall customer experience and is aimed at protecting existing income. We expect this work to commence in 2021 and to complete in Q1 2022.

Projections

6.149 Based on these considerations, our approach to forecasting car parking revenues is as follows.

- We have used 2018 revenues as the baseline.
- For ST car parks, we have reduced existing revenues by [redacted] to take account of disruption while works are completed. Once completed, the extensions to the short-term car parks are projected to generate incremental revenue of [redacted]
- For LT car parks, we have assumed passenger growth will add [redacted] on the basis that the car parks will reach full occupancy in the peak summer [redacted] months and additional growth will be accommodated in shoulder periods. The Eastlands extension will generate incremental revenue of [redacted]
- Due to Staff Car Parking investment, we have assumed there will be no impact on public car parking revenue due to additional capacity being put in place to accommodate future demand and some displaced staff car parking [redacted] spaces due to various CIP projects. There is an annual revenue uplift of [redacted] from incremental spaces rented to third parties.
- Other revenues will [redacted]

6.150 The table below shows our car park forecasts for the next period.

[redacted]

TABLE 6.24 PROJECTED INCOME FROM CAR PARKING 2019-2024

[redacted]

6.151 The table below summarises the known events that have been accounted for in the forecasts and the additional risks that affect our ability to meet these projections. The key risk to the projections is the potential for delays to the capacity-enhancing projects, particularly in terms of the process for obtaining planning permission for further developments. This would delay the release of additional capacity that is needed to meet projected future demand.

Table 6.25 Key Risks Associated with income from Car Parking

Accounted for in projections	Additional risks
Revenue uplifts for LT Red, T1 MSCP, and T2 MSCP expansions and Staff Car Parking	Changes in timeline for enhancement projects that result in delays to new capacity. The risk to adding this capacity mainly lies in gaining planning permission. Recent experience from the airport and other national sites shows that car park planning permits are becoming more and more difficult to secure, and are taking significantly longer than anticipated.
No additional yield management measures (i.e. prices unchanged)	Need to reduce prices to maintain value proposition
Existing competition from off-site car parks, taxis and public transport	Relaxation of restrictions around providing ride-sharing services using private cars would lead to stronger price competition from companies such as Uber. Stronger use of public transport due to new high frequency Dublin Bus Connects project.

6.30 Forecast: Advertising

6.152 We have an established advertising income stream from offering advertising and sponsorship opportunities to corporations and agencies. Our advertising sales team aims to maximise advertising income, subject to not disrupting the flow of passengers, obstructing airport signage or confusing passengers in key information areas.

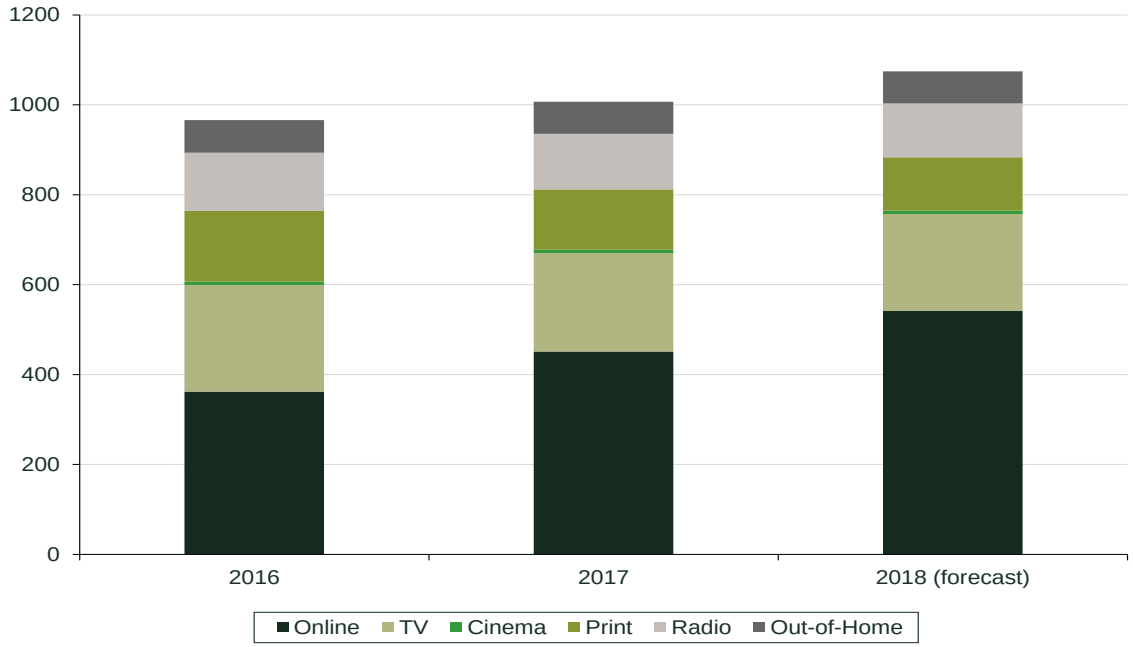
Underlying revenue growth

6.153 In the long run, we would expect to observe a relationship between passenger numbers and advertising revenue, since a greater passenger footfall should increase the attractiveness of advertising space. However, advertising revenues have not grown as projected in the current control period despite stronger than expected passenger growth. This appears to be linked to ongoing trends in the out-of-home advertising market.

6.154 Research by Core, the marketing communications company, found that total advertising expenditure in Ireland grew by 4% to over €1 billion in 2017.[41] This growth was attributable to spending on online advertising, which increased by around 25% last year. Online now accounts for around 45% of total advertising spend.

6.155 Despite the growth in total advertising spend, the Core analysis indicates that expenditure on out-of-home advertising in Ireland declined by 1% (to a total of just under €72m) in 2017. Expenditure on out-of-home advertising has also declined as a percentage of total advertising spend (currently accounting for around 7% of the total market).

FIGURE 6.9 IRISH ADVERTISING SPEND, 2016-18 (€M)



Source: Core, Outlook 2018.

6.156 We consider that trends in out-of-home advertising are most relevant when considering the outlook for our advertising business, as this is effectively the market we operate in. In this context, a key trend is the increasing digitisation of outdoor formats and the general decline of static advertising. While the out-of-home digital network is still developing in Dublin, there is evidence of media owners investing in digital signage in response to the declining demand for static sites. For example, JCDecaux has recently introduced the first large format LED roadside advertising screens in Ballsbridge.[42]

[41] Core (2018), 'Outlook 2018'.
[42] https://www.jcdecaux.ie/news/jcdecaux-digipole-1st-large-format-digital-roadside-screens-0

6.157 We have recently invested in 62 digital advertising screens across both terminals. This means we are well placed to meet advertisers' evolving requirements with the capability to deliver a flexible and dynamic advertising platform. However, the current limited geographical spread of digital out-of-home advertising infrastructure means that advertisers have yet to realise the full potential of this medium and revenue growth in this area will take time to materialise.

Investment projects

6.158 In order to further develop our digital advertising offer, our CIP includes a proposal to invest €2.2m in new and upgraded infrastructure, including the installation of large LED 'statement' digital formats. This is forecast to generate an [redacted]

6.159 [redacted]

Projections

6.160 Given the above, we have assumed that advertising revenues will [redacted]

6.161 Our income is then forecast to increase year-on-year for the remaining four years of the control period as our investment unlocks additional revenues and our existing business continues to grow. In aggregate, advertising revenue is projected to [redacted]. We expect income per passenger to remain relatively constant over the control period.

TABLE 6.26 PROJECTED ADVERTISING INCOME 2019-2024

[redacted]

6.162 The key risks to these revenue projections are alcohol legislation and the general reduction in demand for out-of-home advertising.

TABLE 6.27 KEY RISKS ASSOCIATED WITH ADVERTISING INCOME

Accounted for in projections	Additional risks
Uplifts for CIP project	Delays to or cancellation of this project
Reduction in demand for out-of-home advertising	Stronger decline in demand than captured in our forecasts. For example, a significant threat to advertising revenues is the passing of The Public Health (Alcohol) Act, which could lead to major restrictions on alcohol advertising. A 2017 study estimated that the proposed measures would reduce total advertising expenditure in Ireland by €20m per annum and would have a particularly severe impact on out-of-home advertising (with an €11m reduction in spend in this market).[43]

6.31 Forecast: CBP

6.163 daa provides preclearance for U.S Customs and Border Protection (CBP) in Terminal 2. Demand for this service has been strong and the results of the joint scorecard designed with one of our airlines suggest that passengers are very satisfied with the service provided. While there is no obligation on us to provide this service, it boosts the attractiveness of Dublin Airport to travellers to and from the USA and has been a key contributory factor to the growth in our transatlantic connecting business in recent years. We therefore intend to continue providing US pre-clearance in the next control period, and to maximise the scale and usage of the CBP facility.

6.164 The CBP facility is nearing full capacity and we are planning to accommodate additional capacity to ensure that future demand can be met without compromising service quality. This includes exploring the use of new technologies and expanding the existing facility to include a minimum of 11 US transport security screening lanes and 30 CBP officer positions.

6.165 The aim of these enhancements is to allow our CBP to grow in line with increases in passenger numbers. We therefore expect CBP income to grow at a CAGR of [redacted] to 2024. We have assumed a [redacted] per departing passenger. This will result in income [redacted]

[43] The Potential Impact on Irish Media of the Public Health (Alcohol) Bill 2015, June.

6.166 It is important to also point out that there is a significant additional cost per CBP Officer that we are incurring as a result of requiring more Officers. The annual cost of officers in 2019 is expected to be [redacted]. Hence, while our income is projected to increase, we are also taking on additional cost. Any adjustments to these forecasts would need to take account of the opex implications.

TABLE 6.28 PROJECTED INCOME FROM CBP 2019-2024

[redacted]

TABLE 6.29 KEY RISKS ASSOCIATED WITH INCOME FROM CBP

Accounted for in projections	Additional risks
Uplifts for CIP project	Delays to new capacity, including securing additional CBP officers.
[redacted]	[redacted]
	Other European airports starting to provide CBP facilities

6.32 Forecast: Other

6.167 For the next control period, other income primarily relates to lounges, fast track, platinum services and airport club. These are largely optional, value added services for passengers that are willing to pay an additional charge for a higher quality of service.

6.168 We are planning three main investments in this area:

- We are planning to invest €11.4m in new lounge capacity (Pier 1 Lounge and mezzanine level lounge in T2) and refurbishment of existing lounges (T2 Lounge and 51st&Green Lounge).
- We are seeking to invest €1.7m to enhance our existing fast track facility in departures, as well as introducing a dedicated fast track arrivals facility.
- Finally, we are proposing a €2.1m upgrade to our platinum services.

6.169 Taking account of these investments and wider trends in these income lines, we have developed our forecasts on the basis of assuming that:

- Income from our existing lounges will grow in line with passenger numbers, generating an additional [redacted]. The expansion of our lounge facilities will generate a revenue uplift [redacted]. This will be phased over the preceding two years.
- Our fast track revenues are also projected to [redacted] The enhancement of our fast track facility will generate an additional [redacted]
- For platinum services, revenue growth for existing facilities will be slower than [redacted] passenger growth as around half of this revenue line is currently accrued from general aviation activities. There is limited scope for growth [redacted] due to a lack of available slots. We therefore predict that [redacted]. The upgrades to our platinum services outlined in the CIP are expected to increase revenues by [redacted].
- Income derived from all other sources is projected to remain flat in real terms.

6.170 [redacted]

TABLE 6.30 PROJECTED INCOME FROM THE "OTHER" CATEGORY 2019-2024

[redacted]

6.33 Forecasts

6.171 In this section we have presented our commercial income forecasts to 2024.

6.172 Passenger volumes are a key driver of commercial income in the long run, but it is important to take account of a wide range of other factors, including contractual arrangements, competitive forces, capital investments and, critically for the next period, available capacity. Analysis of historical elasticities will, at best, provide a partial picture.

6.173 We have therefore based our forecasts on detailed, line-by-line analysis reflecting our supply side decisions, market trends, the impact of our proposed capital programme and expert judgement regarding the scope for revenue growth.

6.174 As outlined above, we are anticipating positive revenue growth in all business lines, with the exception of commercial property. This revenue line will be subject to displacement by other commercial activities under our proposed CIP. In general, there is a growing disconnect between revenue trends and passenger growth, as revenue is increasingly dependent on new investment to keep pace with increases in passenger numbers. We therefore expect a decline in the level of income per passenger across a number of our commercial business lines.

6.175 In aggregate, our central forecasts lead to a commercial income target of [redacted]

Assuming this were to be achieved, we would have roughly doubled our commercial revenues in real terms over a ten-year period.

TABLE 6.31 KEY RISKS ASSOCIATED WITH INCOME FROM THE "OTHER" CATEGORY

[redacted]

6.176 Our forecasts show a flatlining of total commercial income between 2019 and 2021. This is driven by the unavoidable displacement of around 15% of our commercial property business as a result of the North Apron and South Arpon developments, the displacement of a smaller proportion of our F&B income ([redacted]), disruption as construction commences on our commercial CIP projects, and a reduction in car rental income following contract renegotiations. The figure below compares our projections to a situation in which this displacement did not occur.

FIGURE 6.10 REVENUE PROJECTIONS 2019-2024 (2018 PRICES)

[redacted]

6.177 On a per passenger basis, we are forecasting an increase in income from [redacted] to in [redacted] 2024.

We estimate that per passenger revenues would be [redacted] in 2024 without the displacement of our commercial assets.

Figure 6.11 Commercial revenues per passenger with and without displacement (2018 prices)

[redacted]

6.178 The table below shows the implied passenger elasticities for those parts of our commercial business for which we would expect there to be a short run relationship between passenger growth and income. The elasticities for retail and F&B exceed those used by CAR in 2014. Car parking revenues are expected to be inelastic to changes in passenger volumes until additional car parking spaces are introduced towards the end of the period.

Implicit passenger elasticities

TABLE 6.32 IMPACT OF PROPOSED CIP ON PASSENGER ELASTICITIES

[redacted]

6.179 Following on from the rapid revenue growth seen in the current control period, and in light of the increasing capacity constraints across our commercial business segments, we believe these represent challenging forecasts. This represents a much higher base income than forecast by CAR at the time of the last determination. The higher base

income will generate significant benefits for customers in increasing the amount by which aeronautical charges are subsidised through to 2024.

6.180 Our ability to meet these projections is tied to receiving agreement on the commercial CIP that we have put out for consultation with airlines. A reduction in the level of investment would have a negative effect on our projections.

6.181 More generally, the balance of risks around these forecasts is weighted towards the downside as the capacity constraints we are facing in the short term cap the potential for upside.

6.34 Proposed Regulatory Treatment of Commercial Revenues

Setting commercial revenue targets

6.182 At the last review, CAR's approach to setting commercial revenue targets involved:

- Splitting our commercial revenues into six categories.
- Estimating a single revenue-passenger elasticity for each category, based on an analysis of the historical relationship between commercial revenues and passenger numbers.
- Combining these elasticities with forecast 2015-19 traffic growth to provide a base revenue projection for each category.
- Making additional adjustments to take account of the projected revenue impact of commercial projects included in the CIP.

6.183 This top-down approach has the advantage that it is easy to implement but provides an oversimplified view of revenue growth potential. Firstly, it assumes that historic elasticity data provides a good indicator of the future and that there is a linear (and stable) relationship between passenger numbers and commercial revenues. Secondly, by modelling passenger numbers as the sole driver of commercial revenues, CAR's analysis is subject to omitted variable bias. As identified in the analysis above, there are many variables that affect our commercial revenues, which, if ignored, could provide a distorted view of our potential revenue growth. In particular, CAR's approach does not take sufficient account of supply side factors or future events, which are particularly important for the next control period given the capacity constraints that we face and the potential impact of events such as Brexit.

6.184 Consequently, we strongly believe that setting our commercial revenue targets by applying simple passenger elasticities to projected passenger growth, as CAR did in 2014, is not appropriate for the next control period and would result in highly uncertain and inaccurate targets. By way of example, estimating future car parking revenues using

an elasticity based on the historical correlation between passenger numbers and car parking revenues would significantly overstate the future revenue growth because we are now at capacity for large parts of the year.

6.185 CAR has suggested two potential alternatives to this approach:

- Introducing additional variables into its top-down models.
- Undertaking a bottom up review of CAR's plans.

6.186 The first of these approaches has the potential to increase the robustness of CAR's models by addressing the omitted variable bias in the existing approach. However, at a minimum, such an approach would need to include variables that capture capacity (which is not the case in the list of variables identified by CAR in its issues paper). Even if CAR were to include capacity measures in its models, establishing statistical relationships between commercial revenues and a wide range of variables would be a major task, which would presumably be based on historical time series data.[44] Consequently, this would still be a primarily backward looking exercise so would not provide a good approximation of the future. The process of forecasting income for the next five years would be much more difficult than estimating these relationships, since even with the elasticities established, forecasts must be undertaken for each of the drivers over each year of the period.

6.187 This highlights the complexity of forecasting non-aeronautical income solely by an econometric model. Such an analysis can have value, but we would not expect it to be able to produce a baseline point forecast of sufficient robustness to be relied on for a price determination.

6.188 In light of these challenges, we believe that the only viable approach is a forward-looking, bottom up assessment of our commercial revenue plans, similar to that undertaken by the UK Civil Aviation Authority in recent price controls. We previously advocated a bottom up assessment of commercial revenues in 2014, and in response to CAR's issues paper earlier this year, on the basis that:

- While a bottom up review would be a more time consuming and data intensive process, we would expect the resultant targets to take account of a greater number of factors and hence reflect a more holistic view of potential revenue growth.

[44] Complete data may, of course, not be available over a sufficiently extended time period (encompassing a full economic cycle).

- The forward-looking nature of the review would ensure that commercial revenue targets took account of the specific challenges and opportunities of the upcoming period (and not just historical performance).

6.189 As such, we continue to believe that this would represent a more robust approach to setting commercial revenue targets and would welcome the opportunity to discuss this further.

The UK CAA's approach to assessing commercial revenues

In its Q6 price control review, the UK CAA commissioned external consultants, Steer Davies Gleave, to undertake a detailed, independent review of Heathrow Airport Ltd's (HAL) commercial revenue forecasts. In parallel with this review, HAL undertook extensive consultation with airlines as part of the mandated 'constructive engagement' process.

This approach included a detail line-by-line review of recent and forward-looking trends that were expected to affect HAL's commercial revenues in the forthcoming period, and discussions with a range of stakeholders. This covered both demand-side and supply-side factors.

The consultants took HAL's forecasts as the starting point and considered whether there was any evidence to suggest that the CAA's targets should be more or less challenging than HAL's proposals. Focus was placed on areas of disagreement between the airlines and HAL, such as the impact of the ban on tobacco advertising on retail revenues.

SDG's projections of the commercial revenues per passenger were combined with the CAA's traffic forecasts to provide an overall commercial revenue target.

Source: CAA documents.

6.35 Benchmarking

6.190 In its April issues paper, CAR indicated that benchmarking to other airports could provide useful insight on the effectiveness of our commercial activities, and the scope for us to grow these revenues in the future.

6.191 Like all airports, we face a unique set of commercial opportunities and constraints that are shaped by our history; the nature of our assets and facilities; the characteristics, needs and priorities of our users; and the competitive dynamics in the commercial markets we operate in. Compared to international airports, we are also exposed to different macroeconomic conditions.

6.192 We would therefore expect there to be crucial differences between ourselves and other airports in terms of both demand-side (i.e. users' willingness and ability to pay for commercial services) and supply-side characteristics (i.e. the viable scale and scope of our commercial offering).

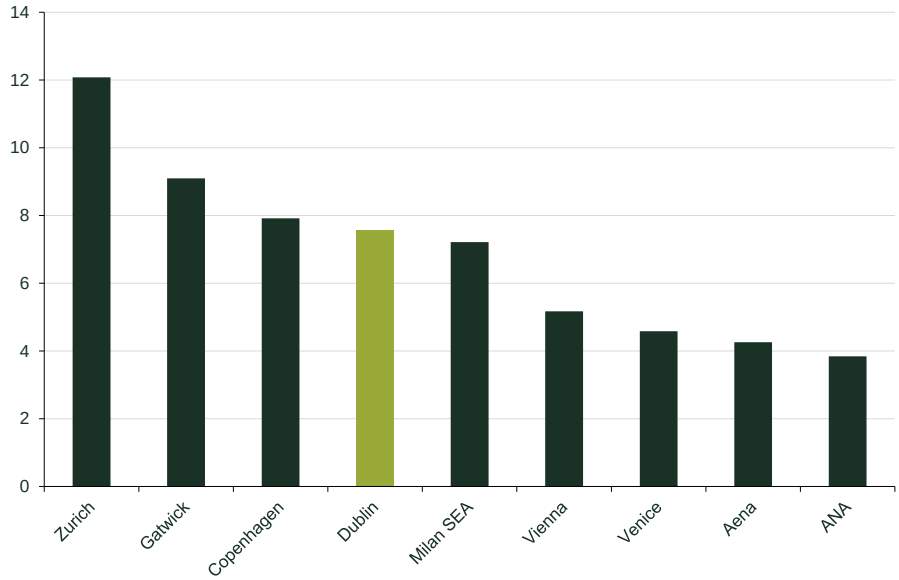
6.193 Moreover, there are underlying differences in how commercial activities are defined and recorded in airports' statutory or regulatory accounts. Care therefore needs to be taken to ensure that comparisons are like-for-like.

6.194 We are also cognisant of the risk of selection bias and confirmation bias when choosing a comparator set. In order to mitigate this risk, the comparator airports need to be selected in accordance with a set of commonly agreed criteria.

6.195 Consequently, our view is that commercial income benchmarking could potentially provide a high-level cross-check of our forecasts, but there is a need for careful thought as to whether good comparators exist and any attempts by CAR to draw inferences from such a benchmarking exercise would need to take account of context and underlying differences.

6.196 High-level benchmarking to other European airports suggests that our total commercial revenues per passenger are in line with Copenhagen and the Milan airports, and higher than Aena, ANA, Venice and Vienna. Gatwick and Zurich have higher commercial revenues per passenger. These figures are based on commercial revenues and passenger numbers declared in the comparator airports' annual reports. Care therefore needs to be taken when interpreting these numbers due to potential differences in the scope and reporting of commercial revenues, which could mean they do not reflect a like-for-like comparison.

FIGURE 6.12 COMMERCIAL REVENUES PER PASSENGER AT EUROPEAN AIRPORTS (2017, €/PER PASSENGER)



Source: Airports' 2017 annual reports.

6.197 The table below presents elasticities for total commercial revenue to changes in passenger numbers for six European airports over the period 2013-17, after adjusting for the impact of inflation. The table shows that elasticities have varied significantly across the airports, with an average of 1.02. This compares to a simple elasticity of 1.3 for Dublin over this period. There are some contextual factors that are important to consider—for example, Aena moved to a dual till charges model and was part-privatised during this period, leading to much greater focus on increasing commercial revenues. Moreover, these elasticities include the impact of revenue generating CAPEX projects so are not directly comparable to the elasticities used by CAR in 2014.

6.198 The wide range of results arguably highlights the issues with relying on simple passenger elasticities as these numbers do not take account of a host of other factors that need to be taken into account.

TABLE 6.33 WIDE RANGING PASSENGER ELASTICITIES ACROSS EUROPEAN AIRPORTS

Airport	Elasticity 2013-17
Copenhagen	0.47
Zurich	0.70
Gatwick	0.98
ANA	1.12
Milan	1.31
Aena	1.53
Average	**1.02**

6.36 Rolling incentives

6.199 We are currently incentivised to grow commercial revenues through the application of a rolling scheme, which allow us to retain incremental revenues for a period of five years. This equalises the incentive to realise commercial opportunities across the regulatory period. The rolling incentive is based on a per passenger target for retail, car parking and advertising and a gross revenue scheme for commercial property.

6.200 It is not possible to quantify the impact of the rolling incentive scheme in driving improved performance over the period to date, given the difficulties in defining an appropriate counterfactual (i.e. what would have happened had there not been a rolling scheme in place). Moreover, the biggest benefits would be expected in the last two years of the control period, when historically there would have been limited incentive for revenue growth.

6.201 Our view is that the rolling scheme is an important regulatory tool in ensuring that there are appropriate and consistent incentives in place for us to grow commercial revenues, thereby helping to deliver lower aeronautical charges in the long run. This is particularly valuable in the context of a single till regulatory framework where the incentives to increase commercial revenues are otherwise diluted. The rolling scheme should continue to apply in the next period.

6.202 We expect an adjustment for Commercial Revenue outperformance over the period 2016 – 2018 in our 2020 – 2023 Commercial Revenue projections as due under this scheme.

6.37 Access to Installation

6.203 The table below outlines the ATI income included in our revenue projections.

TABLE 6.34 PROJECTED ATI INCOME 2019-2024

6.204 The current cap for ATI fees is €2.2m p.a. which based on current income levels (2017: €2.8m) and projections is insufficient.

6.205 The €2.2m was based on 2013/2014 ATI revenue and reflected revenues based on suppressed growth expectations Furthermore, baggage Hall Desk fees were not included as an ATI charge when setting the €2.2m cap – any related revenue to be retracted would appear unfair on this basis.

6.206 The ATI income remains below the associated costs previously presented to the commission by daa in applications for approval of charges (Baggage Hall €0.3m; Check-In Desks €10m). With the bulk of the increase from 2020 being CUPPS related, this should be factored into the ATI cap, should it continue to remain in place.

6.207 We would ask that CAR revisit the appropriate cap over the next regulatory period taking into account ATI revenues will grow with demand. The principle of taking back revenue once it exceeds a cap which is not cost reflective is penal to Dublin Airport and CAR should ensure an appropriate cap is in place.

6.38 Revenue drivers, Opportunities and Constraints

TABLE 6.35 SUMMARY OF REVENUE DRIVERS, OPPORTUNITIES AND CONSTRAINTS

Business area	Revenue drivers	Opportunities	Constraints
Retail	Passenger numbers; Passenger mix; Trends in demand for the relevant goods (e.g. tobacco and alcohol, P&C); Disposable income; Levels of duty; Exchange rates; Amount of retail floor space; Dwell time; Onboard selling strategy of airlines; Competition from high-street and online retailing	Passenger growth will increase revenues CIP contains €8m of retail development and over €5m of F&B development.	Expecting limited growth in total floor space dedicated to retail Changing passenger mix has affected PAS (e.g. low income leisure passengers spend less on high yielding duty-free products) Decline in tobacco revenues Potential alcohol legislation Competition from online and high-street stores which are able to offer greater convenience and are increasingly price competitive Strong Euro affecting price competitiveness internationally
Commercial property	Availability of land; Occupancy; Existing contractual agreements (which may be long term in nature) and renegotiation points; Supply and demand in the wider property market	West Apron development. [redacted] which come up for renewal within the next two-three years.	<1% vacant space so little scope to grow revenue on existing portfolio It is likely that Masterplan requirements will negatively impact commercial property revenue and hence an elasticity of zero may be inappropriate There are a number of leases which were recently agreed (e.g. Skybridge, ATC Tower and Fuel Farm) and hence there is little opportunity for uplift in the near future in these areas (aside from step-ups, CPI etc. already agreed). Current over-recovery on check-in desks will be clawed back in next determination (€1.5m up to 2017)

			[redacted]
Commercial concessions	Guaranteed minimum sums Space allocation (car parks and floor space) Demand for car hire and financial services	Passenger growth Investment in car hire facilities	Declining demand for banking and currency exchange services
Car parking	Demand and supply of car park spaces; Development of competition from off-airport car park operator(s); Other modes of access to the airport; Pricing strategy and real-time yield management; Changes in traffic mix (e.g. lower per-passenger income if the transfer percentage increases)	CIP contains c.€48m of projects to maintain and enhance our car parks. This is expected to deliver an additional 3280 spaces across short-term and long-term car parks.	Car parks are at capacity and have been for 2 years. Revenue growth has partly been achieved through yield management, resulting in higher prices. Further price increases would affect the value for money of our operation and risk pushing passengers towards alternatives. Obtaining planning permission for further developments takes time Some spaces transferring to (lower yielding) staff parking. Threat of entry from disruptors.
Advertising	Footfall Quality, type and flexibility of advertising offer Pricing strategy Competition with other modes of advertising	New digital advertising infrastructure Passenger growth increases attractiveness of advertising space	Decline of static advertising revenues Competition from online advertising

7. Capital Expenditure

7.1 Efficient allowances

7.1 As set out in our response to the Issues Paper[45] [46], which should be considered by the Commission in tandem with this section, daa is in favour of incorporating an Independent Fund Surveyor (IFS) into the regulatory process from 2020 for approved capital projects that would meet certain criterion in order to create a more effective means of setting pure ex ante Capex allowances at the airport.

7.2 Heathrow has a gateway system in place that involves a combination of ex-ante and ex-post assessment as described below. The process in Heathrow is initiated through the airport and airlines (via AOC) jointly engaging a consultant body (the IFS) on suitable projects in order to evaluate the actual cost of a project by observing, for example, how unforeseen challenges are overcome in real time. This minimises the role of the regulator in investment decisions but is similar to the current framework of the reliance on independently sourced cost consultants.

7.3 In turn the regulator agrees to have due regard for the IFS via the IFS' report when reconciling provisional allowances to reflect the true cost. The airport shares documents with the IFS on a monthly basis – documents that would otherwise have been prepared. The IFS does not have any responsibility for the project itself and therefore cannot approve or reject projects.

7.4 Costs that are relevant to the RAB are not crystallised until the third stage of the process and just before construction commences rather than at the time of price review. Crucially this minimises the risks associated with more simplified design specifications driving future cost estimates and allowances.

7.5 There is considerable scope for further adjustments to the RAB on an ex post basis following an assessment of outturn costs, which is informed by the judgement of an independent fund assessor.

[45] The Commission has considered this matter in paragraphs 8.21-8.25 of its Issues Paper http://www.aviationreg.ie/_fileupload/2019%20Determination/2018-04-30%20CP7%20Issues%20Paper.pdf

[46] Section 7.7 of our response to the Issues Paper addressed (paragraphs 7.16-7.27 of our response to the Issues Paper identifies our perceived risk with the current regulatory mechanism and a preferred alternative mechanism. http://www.aviationreg.ie/_fileupload/2019%20Determination/Dublin%20Airport%20(Non-Confidential).pdf

7.6 There are multiple benefits to this system compared to the current framework particularly as the IFS is brought along the journey in real time rather than the consultants coming in for a few months every 5 years or so.

7.7 Additionally, ex post reviews by the regulator and its consultants could replicate shortcomings with pure ex ante reviews in place at the moment i.e. consultants coming in for a number of weeks after the fact (e.g. at the end of the Determination period) tends to be insufficient to capture and review everything. An IFS process would eradicate the 'benefit of hindsight' debate.

7.8 We look forward to proceeding the next Capital Investment Programme with an evolved regulatory mechanism that seeks to minimise the risks associated with setting pure ex ante capital allowances.

7.2 Capital Investment Programme

7.9 The final Capital Investment Programme is contained in Appendix 1.

8 Cost of Capital

8.1 Overview

FIGURE 8.1 NERA COST OF CAPITAL RECOMMENDATIONS FOR 2020-2024

	Lower bound	Upper bound	Method
Gearing	40%	50%	Regulatory precedent and empirical evidence
Cost of Equity	7.5%	9.1%	Calculation.
Cost of Debt	1.2%	3.3%	RFR + debt premium
Pre-tax WACC	**5.0%**	**6.2%**	**Calculation**

Source: NERA calculations

8.1 The cost of capital is one of the key building block elements that needs to be considered as part of the forthcoming regulatory review. An appropriate deviation of the value for this variable is essential to ensure the integrity of the 2019 Determination and the financial viability of Dublin Airport going into the next regulatory period.

8.2 NERA provided the daa with an independent assessment of an appropriate weighted average cost of capital (WACC) for Dublin Airport for inclusion as part of the overall regulatory proposition document for 2020-2024. This report is one of the appendices provided to the Commission herewith.

8.2 Approach to Calculating the WACC

8.3 NERA used the weighted average cost of capital (WACC) methodology to estimate the cost of capital for Dublin Airport, this is consistent with the approach used to date by the Commission and other Irish regulators. The WACC for a given firm is the weighted return on equity and debt, where the respective weights are determined by the relative proportions of debt and equity given the company's gearing.

8.4 NERA measured the cost of equity using the capital asset pricing model (CAPM), which assumes that the cost of equity for a firm is given by

$$R^E = RfR + \beta\,(TMR - RfR) \text{ where } TMR - RfR = ERP$$

where R^E is the return on equity, RfR is the risk-free rate, β is the measure of the systematic risk of the company's equity with the market portfolio, and TMR is the total return on the market portfolio which is equivalent to the risk-free rate plus the equity risk premium.

8.5 NERA estimated the cost of debt (RD) as the sum of the risk-free rate and the debt premium (DP), which reflects the risk of debt in excess to the risk-free rate.

$$R^D = RfR + DP$$

8.6 NERA relied on long-run historical returns to derive a real total market return (TMR) of 6.6 to 7.0 per cent (real CPI).

8.7 A TMR approach involves measuring the total market return directly, and then calculating the constituent elements by subtracting the observed from the TMR estimate to derive an equity risk premium (ERP). The TMR approach contrasts with an approach that estimates the ERP and RfR separately and independently. Empirical evidence shows that ERP and RfR negatively co-vary, e.g. with the ERP increasing during periods when monetary policy is loose and the RfR is low, as per current market conditions. This implies that over long timeframes the ERP and RfR have moved point-by-point in opposite directions. A TMR approach ensures that the ERP and RfR are estimated jointly and consistently; by contrast, an approach that provides for independent estimation may provide for a total market return that is below investors' cost of capital.

8.8 The most recent Irish regulatory decision by the CRU for Gas Network Ireland (GNI) in 2017 also adopted a TMR approach, while other Irish regulators have recognised the negative co-movement between RfR and ERP, and the stability of the TMR over time.

8.9 A number of UK regulators, including CAA, Ofwat, Ofgem, as well as the Competition and Market Authority (CMA) have adopted the TMR approach. In the 2017 decision for Northern Ireland's gas distribution networks (GD17), UREGNI also used the TMR approach.

8.10 In Italy, the energy regulator AEEGSI adopted the TMR approach in 2015, while in Switzerland, the energy regulator BFE also estimates TMR directly, and calculates the ERP as the difference between the Swiss stock market return and risk-free rate.

8.11 NERA estimated a TMR based on long-run historical returns for the European and global equity market from the Dimson, Marsh and Staunton (DMS) database, which provides time series data on returns on stocks, bonds, bills as well as inflation over the period

since 1900. NERA concluded that long-run historical returns in major European countries and global equity market measures would suggest a real TMR in the range of 6.6 to 7.0 per cent (real, CPI).

FIGURE 8.2 LONG RUN AVERAGE REAL TMR (%)

	1900-2017 long-run average real TMR (%)
Europe	6.2
France	5.8
Germany	8.2
Ireland	7.0
Italy	6.0
The Netherlands	7.2
Spain	5.8
UK (1)	7.3
World	6.6

Note: We note that the 2018 DMS publication includes real returns for the UK market since 1988, which have been calculated using CPI as opposed to RPI inflation. (See DMS (February 2018), Credit Suisse Global Investment Returns Yearbook 2018, p.210.)
Source: DMS (February 2018), Credit Suisse Global Investment Returns Yearbook 2018

8.12 NERA looked at forward-looking evidence on the TMR based on the dividend growth model (DGM) by the Bank of England. The Bank of England DGM shows TMR has been relatively stable, with elevated values during the Great Financial Crisis and the Greek Euro crisis.

8.13 The Bank of England DGM supports a real UK TMR estimate of 8.2 to 9.1 per cent (CPI-deflated), and a real European TMR estimate of 6.2 to 8.7 per cent (CPI-deflated). It considered that forward looking DGM evidence should be used as a cross-check only, given the sensitivity of the results to dividend growth assumptions. NERA went on to rely primarily on long-run historical returns in estimating the cost of equity.

FIGURE 8.3 TMR ESTIMATES FROM BANK OF ENGLAND DGM MODEL

	Index	Spot (Mar 2017)	1Y average (Mar 2017)	5Y average (Mar 2017)
TMR (average RfR)	Euro Stoxx	6.2%	7.4%	7.9%
TMR (LT RfR)	Euro Stoxx	7.1%	8.2%	8.7%

Sources: NERA analysis based on data from Bank of England and European Central Bank. Bank of England (2017), An improved model for understanding equity prices, Quarterly Bulletin 2017Q2(4) and Bank of England yield curves..

8.14 Based on the above analysis, NERA estimated a TMR for Dublin Airport in the range of between 6.6 and 7.0 per cent for the forthcoming 2019 Determination, relying on long-run historical returns as the primary source of evidence. This TMR range is consistent with recent Irish regulatory decisions, including the most recent CRU 2017 decision for GNI and also the 2017 CER decision where the CER determined a TMR range of 6.5% to 6.75% with a point estimate of 6.65%.

8.15 NERA recommends an RfR (real, CPI) of 0.0 to 2.0 per cent, based on short-run market evidence and long-run historical averages.

8.16 The lower bound RfR of zero per cent is based on expected European government yields, which indicate that the market expects these yields to remain below or near zero in real terms over the next regulatory period. The upper bound of 2 per cent is based on the long-run historical average and Irish regulatory determinations, which lies above spot or forward rate evidence. This is consistent with the Irish regulators' approach of placing greater weight on long-run evidence to avoid setting an allowed return which varies with the business cycle contributing to co-variant and regulatory risk.

8.17 Recent Irish regulatory precedent on the RfR ranges from 1.90% - 2.10%, which is above the current market evidence examined by NERA.

FIGURE 8.4 RECENT IRISH REGULATORY DECISIONS ON THE RFR

	Description	Real RfR
CER (2017)	Gas Network Ireland	1.90%
CER (2016)	Irish Water IRC2	2.00%
CER (2016)	ESBN/EirGrid PR4	1.90%
ComReg (2014)	Eircomm	2.10%
Range		1.90-2.10%

Source: NERA analysis of regulatory precedent

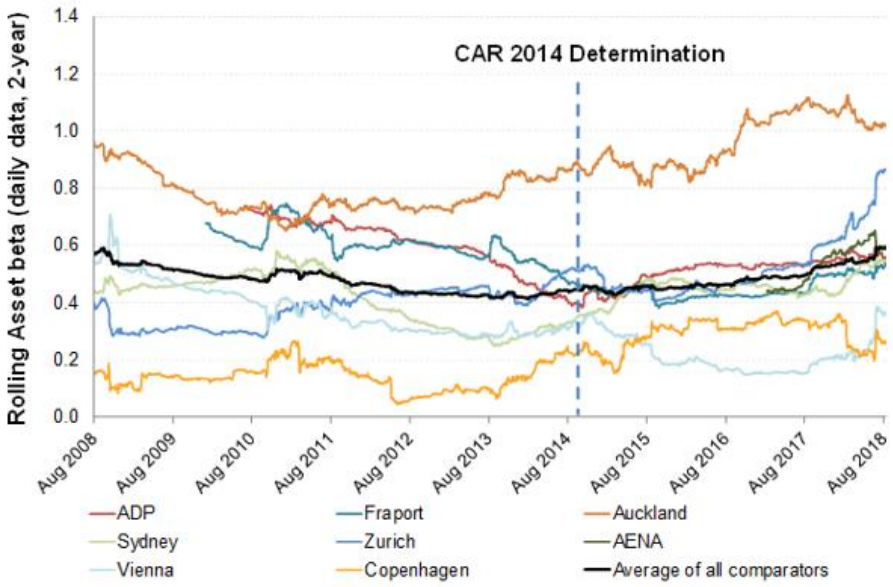
8.18 NERA estimated an ERP of 5.0 to 6.6 per cent as the residual, that is, calculated as the difference between the TMR and the RfR under the TMR approach.

8.3 Empirical evidence shows increase in beta risk since 2014

8.19 Since daa is not a publicly listed company, NERA estimated beta risk for Dublin Airport based on empirical evidence on betas for comparator companies. As illustrated below, betas for listed airport comparators have increased on average since the 2014 Determination.

8.20 The empirical beta analysis for the wider set of airport comparators shows that beta risk has increased for airports around the world since the Commission's 2014 Determination. The market evidence shows that beta risk increased as markets emerged from the financial crisis. The increase in the systematic risks for airports around the world potentially reflects the unwinding of the effect of "flight to safety" which depressed betas for regulated assets during the global financial crisis.

FIGURE 8.5 2-YEAR ROLLING ASSET BETA FOR LISTED AIRPORT COMPARATORS



Source: NERA analysis of Bloomberg data; Note: Estimates based on data up to 31 August 2018.

8.21 Asset betas for comparator airports lie in the range of 0.49 to 0.59 depending on the estimation period and they vary according to risks faced by individual airports.

FIGURE 8.6 ESTIMATED ASSET BETA FOR LISTED COMPARATOR AIRPORTS

		Estimation Period:	
	Country	2 Year	5 Year
ADP (Paris)	France	0.55	0.51
Frankfurt	Germany	0.53	0.44
Zurich	Switzerland	0.88	0.54
Vienna	Austria	0.37	0.21
Copenhagen	Denmark	0.27	0.29
Sydney	Australia	0.53	0.45
Auckland	New Zealand	1.02	0.95
AENA	Spain	0.59	n.a.
Average		**0.59**	**0.49**

8.4 daa faces greater demand and therefore beta risk than the wider comparator set

8.22 Beta evidence for comparators also needs to be carefully interpreted considering differences in relative risks. NERA used a two-stage approach to assess the systematic

risk of Dublin Airport relative to its comparators. First, it examined the risks associated with the regulatory framework, and notably the demand risk that the comparators face, the principal regulatory risk. It then focused on more detailed business risks, around the nature of the traffic and passenger profile and sensitivity to variations in market conditions, as well as operational leverage.

8.23 NERA's analysis of the regulatory framework illustrated that of the listed comparators, AdP, AENA and Auckland, all operate under a five-year fixed control period, and therefore have a similar level of demand risk over the five-year period, although AdP benefits from within period risk mitigating mechanisms. London Heathrow and Gatwick airports also operate under a five-year review. Although the London airports are unlisted, NERA drew on UK's CAA decisions for these airports to inform risk. For other listed airports (Fraport, Vienna, Zurich, Copenhagen), the period between the reviews is shorter than five-years and/or the airport has the rights to initiate a periodic review where revenues deviate from costs. This implied that their respective betas understate the risks faced by Dublin Airport.

8.24 NERA then carried out an assessment of the detailed demand characterises across the comparator airports. This showed that Auckland and Gatwick airports have the most similar business risk profile to Dublin Airport, out of the set of airports that operate under a five-year price control and therefore face similar levels of demand risk. ADP and Heathrow airports appear less risky relative to Dublin Airport due to their relatively larger size, position as international hub airports with full-service airlines, and a relatively large share of business traffic.

FIGURE 8.7 SUMMARY OF RELATIVE RISK COMPARISON FOR COMPARATOR AIRPORTS

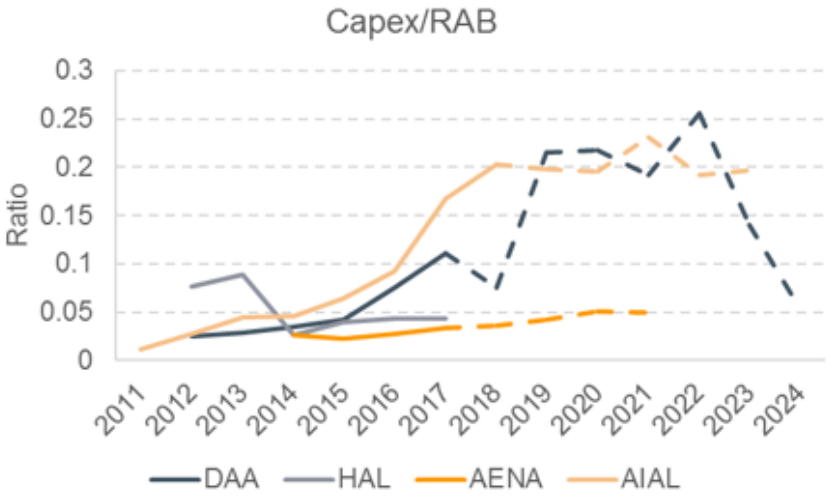
	Demand Risk	Relative Risk Dimension		
Principal listed comparators (5-yr price cap)		Airport Size	Revenue Split	Customer Concentrati
Auckland	=	✓	✓	✓
ADP	=	×	×	×
AENA	=	×	×	✓✓✓
Principal unlisted comparators (5yr price cap, historically)				
Heathrow	=	×	×	×
Gatwick	=	✓	✓✓✓	✓✓✓
Listed comparators (lower risk regulatory regime)				
Frankfurt	<	×	✓	×
Zurich	<	✓✓✓	×	-
Vienna	<	✓✓✓	✓✓✓	×

Note: Shaded cells refer to comparator airports with regulatory frameworks that involve a similar level of demand risk to Dublin Airport.
Source: Eurostat, Centre for Aviation and Annual Reports.

Higher empirical betas and higher operational implies daa asset beta should be at least 0.6

8.25 NERA also showed that Dublin Airport's proposed next Capital Investment Programme (CIP) which will potentially increase the airport's capital expenditure, will result in a higher capex/RAB ratio relative to this ratio in 2014. This higher Capex/RAB ratio will result in higher measures of operational leverage or cost fixity and this is a key systematic risk factor.

FIGURE 8.8 CAPEX/RAB FOR DUBLIN AIRPORT AND COMPARATOR AIRPORTS



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8.26 NERA showed that increased capital expenditure increases the cost fixity of business and accentuates any impact of a negative revenue shock and therefore the volatility of returns. Operational leverage, akin to the effects of financial leverage, is a recognised element of beta risk in theory and in practice by European regulators.

8.27 In addition, Dublin Airport also faces considerable downside risk from Brexit with the risk of a material downturn in UK passenger traffic over the next regulatory period.

8.28 This would therefore indicate that the asset beta risk for Dublin Airport has not declined since the Commission's previous determination and therefore this asset beta should be at least 0.6 going into the 2019 Determination.

8.29 An 0.6 asset beta is also supported by an analysis of the betas of daa's closest comparators. AdP has a two-year asset beta of 0.55; whereas AENA has a two-year asset beta of 0.59. NERA considered that AdP's asset beta may understate daa's risk given that it benefits from within period demand risk mitigating mechanisms. While Auckland Airport's asset beta is close to 1, this may be explained by the relatively small size of the local stock market.

8.30 NERA concluded that the asset beta for Dublin Airport should be at least 0.6 based on its increased risk profile, notably from higher capex, as well as the latest empirical evidence for its closest comparators.

8.31 NERA therefore found no evidence to support the proposed drop in the Commission's asset beta from 0.6 in the 2014 Determination to a proposed 0.43 as set out in the 2018 Issues Paper.

8.32 A decrease to 0.43 would amount to a substantial reduction which would not be supported by current market and empirical evidence given that

- beta risk has in fact increased since 2014
- Dublin Airport's capital investment proposals will result in an increase in operational leverage driving up the asset beta risk
- Dublin Airport's close comparators AdP and AENA have asset betas of 0.55 and 0.59 respectively which when adjusted for relative size and risk supports a value of 0.6 for Dublin Airport

NERA estimates a cost of equity of 7.5 to 9.1 per cent

8.33 Based on the assumptions outlined above, NERA estimated a cost of equity for Dublin Airport for the next determination of 7.5 to 9.1 per cent. This is based on a TMR of 6.6 to 7 per cent, an asset beta of 0.6 and a gearing assumption of 40 to 50 per cent, drawing on regulatory precedent and empirical evidence.

NERA applied a notional gearing of 40% - 50%

8.34 The Commission has previously used a notional gearing range of 40%-60%, with a point estimate of 50% in its derivation of the cost of capital for Dublin Airport. UK regulators have determined notional gearing ranging broadly from 45% - 62.5%. NERA have proposed a notional gearing of 40% - 50% for Dublin Airport based on regulatory precedent and empirical evidence.

8.35 Regulators in the UK and Ireland have continued to adopt the notional gearing approach, where they have applied a gearing ranging from 45% - 65%. As Dublin Airport is exposed to greater risk compared to water and energy utilities, it needs to exhibit stronger financial metrics, including gearing, to achieve a comparable credit rating. Therefore, the notional gearing for Dublin Airport should be set at a lower level compared to conventional utilities.

FIGURE 8.9 RECENT REGULATORY DECISIONS ON NOTIONAL GEARING

Regulator	Utility	Gearing
CER (2017)	Gas Network Ireland	55%
CER (2016)	Irish Water IRC2	45%
Uregni GD17 (2016)	Gas Distribution	55%
CER (2015)	ESBN/EirGrid PR4	55%
CMA Bristol Water (2015)	Water	62.5%
CAA Heathrow (2014)	Airport	60%
Ofwat PR14 (2014)	Water	62.5%
Ofgem RIIO ED1 (2014)	Electricity Distribution	65%

8.36 Currently the gearing for daa is at around 30% however this is at a group level, with gearing for Dublin Airport higher at around 50% and this measure is also expected to increase towards 55% over the course of the next regulatory determination period.

8.37 NERA concluded that regulatory precedent plus evidence from listed utilities in the UK would suggest a notional gearing in the range of 40% to 50% for Dublin Airport, but with the actual gearing for the regulated entity supporting an assumption at the top-end of this range.

Based on the RfR plus debt premium approach, NERA estimate a cost of debt of 1.2 to 3.3 per cent, in line with CAR's 2014 decision

8.38 NERA estimated the cost of debt for Dublin Airport as the sum of the risk-free rate and a debt premium, consistent with the approach used by the Commission in its 2014 Determination and with recent Irish regulatory precedent.

8.39 Based on this debt premium + RfR approach, in recent regulatory decisions, Irish regulators have set cost of debt values in the range of 2.5 - 3.5%.

8.40 In the recent 2017 determination for Gas Network Ireland (GNI), CER estimated debt premium to be circa 1.0% based on a comparison of the yields of Irish energy sector corporate bonds and benchmark government bonds. CER set a cost of debt for GNI between 1.0% and 2.5%, with a point estimate of 2.5%.

FIGURE 8.10 RECENT IRISH REGULATORY DECISIONS ON COST OF DEBT

Regulator	Utility	Debt Premium	Real CoD
CER (2017)	Gas Network Ireland	1.0%	2.5%
CER (2016)	Irish Water IRC2	1.0%	3.0%
CER (2015)	ESBN/EirGrid PR4	1.0%	2.9%
ComReg (2014)	Mobile Telecoms	1.45%	3.5%

8.41 NERA estimated the debt premium for Dublin Airport to be 100 bps, based on the yield spread of comparable Irish corporate bonds over a benchmark German government bond, matching the years-to-maturity.

FIGURE 8.11 SPREAD OF EURO-DENOMINATED BONDS ISSUED BY COMPARABLE IRISH COMPANIES

Issuer	Years to Maturity	Current Rating	2Y spread (bps)	1Y spread (bps)
Ryanair DAC	5.0	BBB+	114	104
Ryanair DAC	4.5	BBB+	123	105
Ryanair DAC	2.8	BBB+	99	81
ESB Finance	12.8	A-	109	103
DAA Finance	9.8	A-	107	100
ESB Finance	10.4	A-	100	95
ESB Finance	8.8	A-	101	92
ESB Finance	5.4	A-	101	85
ESB Finance	1.2	A-	68	63
Average			**102 bps**	**92 bps**

8.42 Together with an RfR range of 0 to 2.0 per cent based on long-run historical average and current market evidence, NERA projected the cost of debt for Dublin Airport to be 1 to 3 per cent for the 2019 Determination. NERA further included a debt issuance cost allowance of 20 to 30 basis points. Overall, this resulted in a cost of debt estimate for Dublin Airport of 1.2 to 3.3 per cent.

8.43 NERA combined their cost of equity and cost of debt estimates together to estimate an overall cost of capital of 5 to 6.2 per cent for Dublin Airport for the period 2020-2024.

8.44 As previously noted, over the next regulatory period, beginning in 2020, Dublin Airport is projecting spending of approximately €2.15bn on capital expenditure. Dublin Airport has put forward its CIP 2020+ proposals which comprises of 74 core and 18 commercial

infrastructure projects with an estimated combined cost of approximately €567m, plus an additional 25 capacity related projects with an estimated cost in the region of €1.23bn. In addition, Dublin Airport is committed to a further €350m expenditure on the North Runway, PACE & T1 HBS projects.

8.45 This capital expenditure of €2.15bn plus anticipated gross debt repayments of [redacted] will create a funding requirement of [redacted] to fund the next proposed capital investment programme. In addition, the shareholder expectation is for future dividend payments over the next regulatory period, further increasing funding requirements. There is a material risk that Dublin Airport will not be able to deliver the capital programme in the absence of a cost of capital that adequately compensates investors.

8.46 NERA concluded in its report that given that the potential cost of setting an allowed return that is too low is particularly acute for Dublin Airport for the next regulatory determination, the allowed regulated rate of return should be set at the top end of the range at 6.2% to mitigate this risk.

8.47 It is therefore essential that the Commission allows for a reasonable and appropriate cost of capital allowance in its next regulatory determination.

9 Financeability and required Pricing 2020-2024

9.1 Overview

9.1 Since the CIP consultation document was published in November 2018, the capital expenditure requirement for Dublin Airport has increased by €100m to incorporate additional capital projects requested by airport stakeholders for the next regulatory determination period. In addition, the likelihood of a "Hard Brexit" has increased and some major airlines have signalled a difficult trading period ahead. Therefore, the position put forward in relation to maintaining at a minimum existing price levels and targeting a BBB+ credit rating in the CIP consultation document is still vital.

9.2 In making its 2019 Determination, the Commission currently has statutory objectives '*to enable Dublin Airport Authority to operate and develop Dublin Airport in a sustainable and financially viable manner*' and '*to protect the interests of current and prospective airport users'.* [17] In order to achieve these objectives, the Commission must ensure the financial viability of Dublin Airport over the next regulatory period.

9.3 In ensuring financial viability over the next Determination period, the Commission must enable Dublin Airport to maintain its investment credit rating in order to minimise financial risk, access funding markets and raise debt at a reasonable cost and terms.

9.2 Funding CIP 2020+

9.4 Dublin Airport carried €726m of net debt at December 2017 and showed debt metrics correlated with a "modest" financial risk profile (FFO: net debt 29.8%; Net debt / EBITDA 2.8x). These metrics have improved significantly contrasting with 2012 when FFO: net debt was 11.1% and Net debt / EBTIDA was 6.0x (Source: Dublin Airport Regulated entity accounts) due to the lower level of investment required over the current regulatory period.

9.3 New Debt Requirement

9.5 Over the next regulatory period, beginning in 2020, Dublin Airport is projecting spending of approximately €2.15bn on capital expenditure. Dublin Airport has put forward its CIP 2020+ proposals totalling €1.79bn which comprises of 92 core and commercial infrastructure projects with an estimated combined cost of approximately €570m, plus an additional 25 capacity related projects with an estimated cost in the region of €1.23bn. In addition, Dublin Airport is committed to a further €350m expenditure on the North Runway, PACE & HBS projects.

9.6 This capital expenditure of €2.15 bn plus anticipated gross debt repayments of [redacted] will create a funding requirement of [redacted] over the CIP period. In addition, the shareholder expectation is for future dividend payments over the period, further increasing funding requirements.

9.7 This will be funded by 2 sources:

- Operating cashflows at Dublin Airport, which is most dependant on the price cap at Dublin Airport and the passenger levels.

- New debt raised, which is a residual of the level of operating cashflows.

9.8 Dublin Airport's analysis shows that at the current price cap the requirement for new debt will range from [redacted] Therefore, financial viability is key in relation to the deliverability of CIP 2020+.

9.9 While the Commission has yet to set targets for the various building blocks in the forthcoming determination from 2020, daa is of the view that it is reasonable to assume that it can deliver the next CIP without a material increase in the price cap. In other words, it should be possible to deliver the required infrastructure, including those projects currently being delivered (e.g. PACE, North Runway), while keeping the average price cap relatively flat.

9.10 A reduction in the price cap will undoubtedly pose funding challenges meaning that Dublin Airport will have to implement capital constraints and ultimately be unable to proceed with certain projects supported by airport users and approved by the Commission. This issue is heightened with the €100m increase in the final CIP 2020+ proposal.

9.11 As the financial viability of the airport is in the interests of airport users and passengers, it is important that all stakeholders are aware that a material reduction to the current price cap of €9.57 in 2018 would significantly impact our ability to secure a credit rating required to source this increased level of debt, at most potential market conditions (i.e. weak and volatile) and at terms (include interest costs) that are favourable and allow us deliver the scale of investment required. To this point, as a result of our internal due diligence process an initial suite of projects amounting to in excess of €2.5bn were reduced to €1.79bn for the purposes of allowing Dublin Airport to secure an appropriate credit rating.

9.12 As Dublin Airport will need to secure funding in advance of starting these projects, any deferral in remuneration profile will also increase the pressure on credit metrics as

liquidity is a key metric measured by rating agencies and factored into their rating analysis.

9.4 Financeability and Market Expectations

9.13 In order to ensure Dublin Airport can raise the necessary funds on acceptable terms through the different market conditions, a credit rating of not less than BBB+ is required. This is particularly relevant given the significant level of debt required. A reduction in the price cap will undoubtedly pose funding challenges meaning that Dublin Airport may ultimately be unable to proceed with certain projects supported by airport users and approved by the Commission.

9.14 The capital markets and potential sources of funding will be looking for a credit rating that is both on a par with peer airports in addition to a credit rating that has headroom to withstand a downturn. Both of these are detailed further below.

9.5 The Relevance of Peer Airports

9.15 Dublin Airport has a relatively small share of the European Airport debt market and as such it must match or better its peers in order to be attractive to funders. Dublin Airport's European peer airports are all rated at minimum BBB+ or equivalent on their core debt. The practice over the last ten years has been the requirement for stronger investment grade ratings.

TABLE 9.1 INVESTMENT GRADE RATINGS OF PEER AIRPORTS

	Aeroporti di Roma	Aeroports de Paris	Flughafen Zurich	Luchthaven Schipol	Birmingham Airport
S&P	BBB+	A+	AA-	A+	*NR*
Moody's	Baa1	*NR*	*NR*	A1	Baa1
Fitch	BBB+	A+	*NR*	*NR*	*NR*

	Brussels Airport	Manchester Airport	Heathrow Airport	Gatwick Airport	Copenhagen Airport
S&P	*NR*	*NR*	*NR*	*NR*	*NR*
Moody's	Baa1	Baa1	*NR*	Baa1	Baa1
Fitch	BBB+	BBB+	A-	BBB+	BBB+

9.16 Targeting not less than a BBB+ credit rating also allows headroom, in a highly cyclical industry, for a further downgrade to BBB. A further downgrade to BBB- would have

severe negative consequences in relation to Dublin Airport's ability to access capital markets, ability to raise the target financing amount and at optimal terms of such financing (higher margins, shorter maturities and potential requirement for onerous financial covenants which would severely restrict the business). Therefore, a BBB rated bond will be considered more volatile than a BBB+ rated bond in terms of price given the disproportionate impact of a further downgrade. Achieving the required quantum of funding and terms as a BBB rated bond is challenging and becomes even more difficult when market conditions are weak or more volatile and increases execution risk.

S&P Credit Rating Methodology

In analysing a corporate, S&P assesses risk, competitive position, published financials and forecast future financials to assign a Business Risk Profile ("BRP") and a Financial Risk Profile ("FRP") to the company.

BRP: Business Risk Profile incorporates such factors as country risk, environment, company position, business and geographic diversification, and management strategy. Regulatory support has historically been a factor in the assessment of daa Group's BRP.

FRP: Financial Risk Profile incorporates such factors as risk management, capitalization, earnings, funding and liquidity, accounting, and governance. The FRP is assigned based on financial ratios, with most emphasis applied to FFO: Net Debt and Net debt / EBITDA.

These profiles are then used to calculate an anchor credit rating for the corporate. This rating can be changed, positively or negatively, based on S&P's assessment of the effect of six modifiers.

9.6 Dublin Airport Credit Metrics and Implied Credit Rating

9.17 The 2017 Dublin Airport debt metrics correlate with a "modest" Financial Risk Profile ("FRP"), which when combined with a "strong" Business Risk Profile would likely give an anchor rating of "A". As is the case with daa Group's rating, S&P would apply a 1 notch downgrade due to the "Comparable rating analysis" modifier and ultimately get a standalone credit rating of "A -".

TABLE 9.2 FINANCIAL RISK PROFILE

Financial Risk Profile	Core Ratios: FFO / net debt (%)	Core Ratios: Net debt / EBITDA (x)	Rating based on "Strong" Business Risk Profile
Minimal	25+	Less than 2	AA / AA-
Modest	23 - 35	2-3	A+ / A
Intermediate	13 - 23	3-4	A- / BBB+
Significant	9 - 13	4-5	BBB
Aggressive	6 - 9	5-6	BB+
Highly leveraged	Less than 6	Greater than 6	BB

9.18 Dublin Airport draft financial forecasts show the net debt levels growing to [redacted] during the period of the next regulatory determination, depending on passenger growth and assuming the current price cap.

9.19 At current price cap levels, this significant increase in debt levels will likely see the core debt ratios reduce to below target ratings for BBB+.

9.20 In order to achieve a credit rating of BBB+, Dublin Airport will required a FFO:Net debt at the higher range of 13% - 23% and a FFO:Net debt closer to 3x so as to secure a FRP on the high side of "Intermediate". S&P will maintain the ability to apply the "Comparable rating analysis" modifier to adjust the anchor rating negatively by one notch. This would give an anchor rating of "BBB+" assuming no other changes in factors such as business and liquidity risk.

9.21 While Dublin Airport does accept that its financial conditions have notably improved since 2014, this is expected to revert towards 2014 levels as debt levels increase. Given the unprecedented level of Balance Sheet risk faced by Dublin Airport going into the 2019 Determination it concludes that the use of an investment grade BBB credit rating metric will no longer be adequate for ensuring financeability.

9.22 Maintaining a strong investment grade credit rating (minimum BBB+) is essential for Dublin Airport to maximise the likelihood of debt market access in most market conditions and achieve competitive refinancing terms, improving daa's protection against financial risk.

9.23 A target credit rating of BBB+ would be consistent with precedent in other regulated sectors in Ireland where in its 2017 pricing decision for gas networks the CER based its financial viability test on allowing for an investment grade with some degree of headroom[19].

9.24 Therefore, Dublin Airport would recommend that in assessing financial viability for the 2019 Determination, the Commission should use a target credit rating of BBB+ to allow headroom in ensuring that the daa is allowed to operate Dublin Airport in a sustainable and financially viable manner.

10. Conclusion

10.1 This document and its accompanying appendices constitute Dublin Airport's regulatory proposition and the company believes that this should be taken into account by the Commission in formulating its 2019 Determination with regard to maximum airport charges at Dublin Airport for the forthcoming regulatory period 2020-2024.

10.2 Dublin Airport believes that this submission represents a comprehensive insight into the future outlook for the different building blocks underpinning the price cap for Dublin Airport, in particular service quality and passenger requirements, traffic forecasts, operating costs, commercial revenues and capital expenditure and remuneration.

10.3 In producing this submission, daa has sought to follow transparent, consultative processes engaging where possible with airport stakeholders.

- In the case of service quality at Dublin Airport, in addition to our ongoing passenger engagement processes, we consulted with airlines and other stakeholders on the appropriate service quality regime at Dublin Airport for 2020-2024. We received a limited response to this consultation process which we believe to be indicative of the fact that by and large, airport users are generally satisfied that the current regime the Commission has in place is fit-for-purpose and should be extended into the next regulatory determination period. Our service quality proposal is discussed in detail in section 3 of this document.

- In the case of traffic forecasting, Dublin Airport consulted with airlines outlining the overarching future traffic assumptions such as the traffic demand environment, the outlook for growth, the changing customer base and the significant emerging downside risks. Taking account of these considerations, we provided our current forecast for passenger traffic at Dublin Airport over the period 2020-2024 as set out in section 4 of this document.

- In the case of our capital expenditure programme detailed within the CIP 2020+, these proposals have been developed following an extensive Masterplan exercise, an internal due diligence process, a series of pre-consultation meetings with key stakeholders and formal stakeholder consultation where we consulted extensively with airlines on our draft proposals for in advance of finalising the CIP 2020+ programme. The delivery of this programme will be essential in order to enable Dublin Airport to develop in a sustainable manner and to allow it to reach its medium-term target of accommodating 40 million passengers per annum. Full details of Dublin Airport's capital investment proposals are found in section 7 of this document.

10.4 In our approach with regard to operating cost, daa commissioned Frontier Economics to provide an independent bottom up assessment of the Dublin Airport cost base and a forecast of efficient operating costs at Dublin Airport going forward for the period 2020-2024. Frontier Economics found that given the market conditions in which Dublin Airport currently operates, the airport's latest expected costs for 2018 did provide an appropriate cost base for forecasting operating expenditure into the next regulatory determination period. Frontier Economics went on to forecast operating costs for Dublin Airport for the period 2020-2024 while incorporating a downward adjustment to take account of productivity gains. This forecast is set out in section 5 of this document.

10.5 In relation to commercial revenues, daa acknowledges that in the current period commercial revenues performed exceptionally strongly however going into the next regulatory determination period, Dublin Airport is facing a number of challenges such as capacity constraints, traffic slowdown and displacement of commercial assets. It is expected that there will be an initial period of consolidation in the next regulatory period with an unavoidable flatlining of commercial revenues between 2019 and 2021 stemming from commercial displacement and the constraints prior to the introduction of new infrastructure/capacity. Dublin Airport is however intending to unlock additional commercial opportunities over the course of the next regulatory period through further investment in commercial projects. Our commercial revenue projections for 2020-2024 as set out in section 6 of this document are based on these considerations.

10.6 daa believes that the cost of capital is one of the key building block elements and that an appropriate deviation of the value for this variable is essential to ensure the integrity of the 2019 Determination and the financial viability of Dublin Airport going into the next regulatory period. Given the importance of this variable, daa commissioned NERA to provide an independent evaluation of an appropriate weighted average cost of capital for the daa for 2020-2024. Details of the NERA cost of capital analysis can be found in section 8 of this document.

10.7 In making its 2019 Determination, the Commission currently has statutory objectives to ensure the financial viability of Dublin Airport. Over the next regulatory period, beginning in 2020, Dublin Airport is projecting spending of approximately €2.15bn on capital expenditure. This capital expenditure of €2.15bn plus anticipated gross debt repayments of [redacted] will create a funding requirement of [redacted] over the CIP period. In addition, the shareholder expectation is for future dividend payments over the period, further increasing funding requirements.

10.8 Dublin Airport's analysis shows that at the current price cap the requirement [redacted] for financeability is key in relation to the deliverability of CIP 2020+. In order to ensure Dublin Airport can raise the necessary funds on acceptable terms through the different market conditions, a credit rating not less than BBB+ is required. This is particularly relevant given the significant level of debt required.

10.9 In addition, any reduction in the price cap will undoubtedly pose funding challenges meaning that Dublin Airport may have to implement capital constraints and may ultimately be unable to proceed with certain projects supported by airport users and approved by the Commission. Details of Dublin Airport's financeability proposition can be found in section 9 of this document.

10.10 In conclusion, daa believes that combining our building block proposals will result in an appropriate price-cap for the 2020-2024 period, which while adhering to accepted regulatory principles will allow for the remuneration of Dublin Airport's assets and ensure the financial viability of the regulated entity going forward into the next regulatory period.