Draft Decision
on RP4 draft Performance Plan
for Air Navigation Services
Charging and Performance
in Ireland

18 July 2024

IRISH AVIATION AUTHORITY
ÚDARÁS EITLÍOCHTA NA HÉIREANN

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1. Executive Summary

1.1 This document sets out our proposals for the Irish draft Performance Plan for Reference Period 4 (RP4) of the Single European Sky performance and charging framework, which will last from 2025 to 2029. After this consultation period has concluded, a final draft RP4 Performance Plan will be submitted to the European Commission by 1 October 2024.

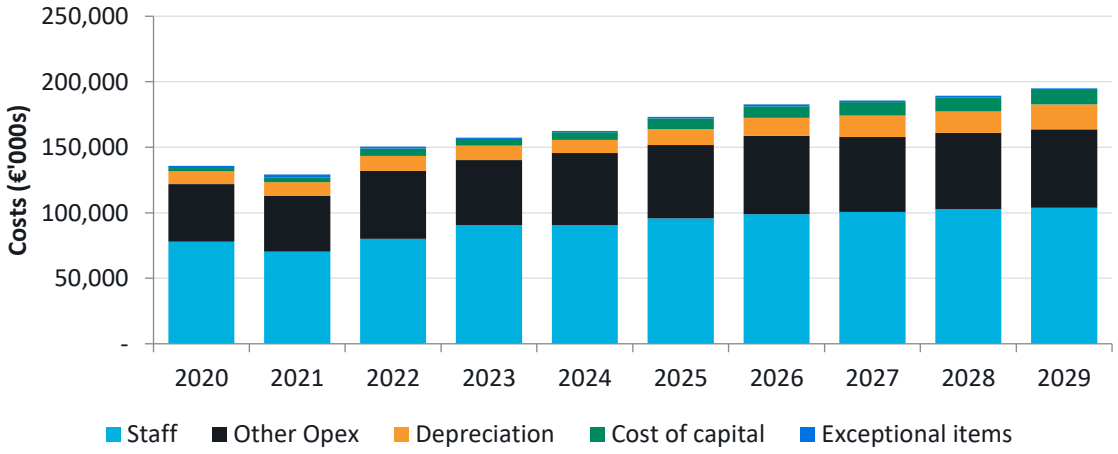
1.2 The RP4 Performance Plan will cover En Route air navigation services in the Shannon Flight Information Region (FIR) and Shannon Upper Information Region (UIR). It will also cover Terminal services provided at Dublin, Shannon and Cork airports. The charging zones are therefore unchanged relative to RP3. It covers costs of the following entities:

- AirNav Ireland ANSP.
- Met Eireann Aviation Services Division (ASD).
- IAA supervision costs, state policy costs, and Eurocontrol costs.

1.3 The costs all relate to the provision or oversight of air traffic services, and are to be remunerated by the users of En Route and Terminal services over RP4. In total, in nominal prices, we propose determined costs for all entities of €1.06bn for the 5 years 2025 to 2029. Of that, approximately €913m relates to our forecast costs of AirNav Ireland, €51m to MET ASD, and the remaining €91m relates to the Eurocontrol, IAA, and State policy costs.

1.4 In real 2022 prices, this equates to a total of €926m, compared to RP3 costs of €736m.[1] Actual costs of 2020 to 2023 and forecast costs for 2024 to 2029, by nature, across all entities, are summarised in Figure 1.1 below.

Figure 1.1: Total Actual and Proposed Determined Costs, RP3 and RP4



Source: IAA Calculations. Real Prices

[1] Only ANSP operating costs are converted to real prices, as per Regulation 2019/317.

Inflation and Traffic Forecasts

1.5 We propose to use the latest available Eurocontrol STATFOR base forecast for En Route and Terminal service units and IFR flights. The most recent STATFOR forecast available is from February 2024.

1.6 The latest STATFOR base forecast sees an Annual Average Growth Rate (AAGR) in En Route service units for Ireland of 1.9% over RP4. This is marginally higher than the RP3 AAGR of 1.7%. En Route service units under the base scenario are forecast to grow by 10%, from 5m in 2024 to 5.5m by 2029. Terminal service units are expected to be grow by 15.7% from 2024 to 2029, increasing from 205k in 2024 to 237k in 2029.

1.7 In line with Article 2(11) and Article 26 of Commission Implementing Regulation (EU) 2019/317, we use the forecast of average Consumer Price Index (CPI) changes from the International Monetary Fund (IMF), which was published in April 2024. It forecasts that inflation will be, on average, 2.0% per year between 2025 and 2029.

AirNav Ireland's Determined Costs

1.8 In total, in 2022 prices, we propose determined costs for AirNav Ireland of €147m in 2025, increasing to €169m in 2029. This compares to a cost level of €137m in 2024. Of this cost base, in 2025 €119m is allocated to En Route and €29m to Terminal (€136m and €33m in 2029, respectively).

1.9 For AirNav Ireland's operating costs, we propose €128m in 2025 rising to €140m in 2029, compared to the 2023 outturn of €119m. This is lower than the level proposed by AirNav Ireland in its RP4 Business Plan, which is €135m in 2025, increasing to €152m by 2029.

1.10 Operating cost forecasts for AirNav Ireland are outlined in Section 4. They are based on the draft report we commissioned from CEPA, supported by Think. The draft assessment is broadly supportive of AirNav Ireland's position that its operation in 2023 was under-resourced in operational divisions, particularly with respect to ATCOs. Staff costs are forecast to increase overall throughout RP4 to address the under-resourced starting point, to take account of forecast traffic growth, to allow AirNav Ireland improve its effectiveness in delivery of Capex, and various other reasons described in Section 4 and in the draft CEPA/Think report. Overall, our draft forecast of efficient AirNav Ireland staff costs for RP4 is €460m, which is lower than the AirNav Ireland proposal of €478m.

1.11 Many non-staff operating cost items are relatively insensitive to traffic levels and as such are not considerably impacted by the growth in the STATFOR base forecast. These have been assessed on a bottom-up basis, across 24 categories. We forecast that these costs will also increase in real terms, although to a lesser extent than suggested by AirNav Ireland. Over RP4, we forecast total efficient other operating costs of €216m, which is 11% lower than the AirNav Ireland estimate of €242m.

1.12 Our assessment of capital costs is set out in Sections 5, 6, and Appendix 1. We propose an estimate for AirNav Ireland's capital costs of €21m in 2025, increasing to €35m by 2029. This is below the capital cost proposal of €22m in 2025, increasing to €40m in 2029, in the AirNav Ireland Business Plan. These differences are primarily driven by our proposals to make some adjustments to the proposed asset lives, and a 20% reduction to the overall estimate of new investments which are likely to be delivered within RP4, in addition to a proposed lower weighted average cost of capital (WACC) than that advocated by AirNav Ireland.

1.13 We propose to set the real WACC at 4.26% for RP4. The range of values estimated is between a low of 3.30% and a high of 5.26%, with a point estimate of 4.26%. AirNav Ireland has proposed a real WACC of 4.91%. The nominal WACC in each year of RP4 is broadly stable due to the forecast rate of inflation holding relatively constant throughout the period at around 2%. Accordingly, the nominal WACC ranges from 6.30% to 6.35%. Overall, we estimate the cost of capital as 12.5% lower than proposed by AirNav Ireland.

1.14 AirNav Ireland's Business Plan proposes a substantial capital investment programme. In considering the overall deliverability of the investment programme, we note that AirNav Ireland significantly underdelivered in RP3 which followed a significant underdelivery in RP2 as well. We therefore consider it unlikely that AirNav Ireland will be able to deliver all of the projects it suggests over RP4, noting that it forecasts a slightly larger level of delivery relative to the RP3 programme. We provisionally consider that a 20% reduction in forecast capitalisations, relative to AirNav Ireland's proposal, is reasonable, in line with the approach we took with the RP3 capex programme. Rather than disallow or adjust the cost of any individual project, we propose to make a programme level adjustment over 2025-2029. However, we propose to exclude the TopSky ATC One project from the scope of this adjustment. The forecast level of capitalisation is therefore reduced from €200m to €175m, with corresponding reductions to capital costs forecast over RP4.

1.15 We also propose to adjust the assumed asset lives for several RP4 projects. The individual adjustments are noted and listed in Appendix 1 and can be observed in the financial model. The adjustments reflect our observation that the asset lives of a number of projects or elements of projects are different (generally shorter) than what we would expect, with reference to the likely useful life of the relevant assets.

MET ASD Determined Costs

1.16 MET Aviation Services Division (ASD) has put forward operating cost proposals for RP4 which are significantly higher than historic levels and trends. In its final Business Plan, MET ASD forecasts that nominal costs will rise to €16m in 2029, almost double the most recent actual costs available, from 2023. Following an assessment of the proposals, as set out in Section 7, we noted that this suggested trend is driven by operating expenditure, and is linked to two main factors:

- There are certain technical issues in relation to price bases and other

aspects of the calculations, and the application of the provisions of the performance and charging framework.

- There are a number of step changes in costs/assumptions relative to RP3. In some cases, there is as yet insufficient substantiation as to what has or is expected to change, or what benefits or deliverables will result from the step increase in expenditure.

1.17 Our draft assessment of MET ASD costs is therefore materially different to those set out in the MET ASD Business Plan. We currently assess efficient costs as staying broadly flat at €9m in real terms across RP4, after increasing in 2024. This means that nominal costs are expected to grow to €10.7m by 2029.

1.18 We allow for the proposed Capex programme and associated depreciation costs as proposed by MET ASD, however we adjust the Net Book Values (NBVs) slightly of some assets to reflect actual capitalisation dates and changes in asset values.

NSA, State and Eurocontrol Costs

1.19 For the NSA, costs in real terms are similarly forecast to remain broadly flat throughout RP4, increasing by €0.14m between 2025 and 2029 from €7.70m to €7.84m. We propose to maintain the methodology of cost allocation used in RP3. Costs are therefore split between En Route (73%), Terminal (15%) and North Atlantic Communications (12%). Therefore, 12% of these NSA costs are outside the scope of the Performance Plan.

1.20 Other state costs are expected to increase by €0.25m in nominal terms between 2025 and 2029, from €11.25m to just under €11.5m. Most of this, approximately €8.7m, is the Eurocontrol costs. We propose to maintain the RP3 allocation methodology, with 100% of Eurocontrol costs allocated to the En Route charging zone, while policy costs of the Department of Transport follow the allocations of the NSA described above.

Key Performance Area (KPA) Targets

1.21 Consistent with the provisions of Commission Implementing Decision (EU) 2024/1688, we propose Safety targets which align with the Union-wide targets during RP4, by ensuring Effectiveness of Safety Management (EoSM) that is at least “Level D” in the objective of safety risk management and at least “Level C” in the other objectives of culture, policy and objectives, promotion and assurance.

1.22 For the Environment targets, the key performance indicator is the average horizontal En Route flight efficiency of the actual trajectory of aircraft (KEA). This measures the average additional distance flown compared to the great circle distance, which is the shortest distance between two points on the surface of a sphere. We propose that the Performance Plan will align with the Union-wide targets. The accompanying reference values for Ireland, as estimated by the Network Manager, increase in ambition from 1.42% in 2025 to 1.34% in

2029.

1.23 There are two KPIs within the KPA of capacity, one relating to En Route capacity and one relating to Terminal capacity. These are:

- The average En Route ATFM delay minutes per flight attributable to air navigation services.

- The average arrival ATFM delay minutes per flight attributable to Terminal and airport air navigation services.

1.24 For the En Route capacity target, we propose more ambitious targets than implied by the Union-wide targets, as reflected in the reference values provided by the Network Manager, by retaining the 2024 target (0.03 mins/flight) as the target for 2025 and 2026, and then setting a more challenging target of 0.02 mins/flight from 2027 onwards. For the Terminal targets, we propose to maintain these at the RP3 level, while making some adjustments to the incentive schemes such that they are more targeted towards delay which is within the control of the ANSP.

1.25 The cost-efficiency KPA includes two KPIs: the Determined Unit Cost (DUC) for En Route services and the DUC for terminal services. Having compiled all of our cost forecasts as described above, we observe that the short and long-term En Route DUC trend is deviating from the target trends, being +2.2% and +0.7% respectively, compared to the Union-wide short-term trend of -1.2% and long-term trend of -1.0%.

1.26 Having reviewed the drivers of this variance, our initial assessment is that it is related to measures necessary to meet the local capacity targets, which, as described above, are more ambitious than the reference values from the Network Manager. Given the overriding nature of the obligation to maintain safety performance, there are a range of such measures within our draft determined cost forecasts, such as the increase in ATCOs to over 350 by 2028, major investment in the ATM systems as part of the COOPANS alliance, and increases in the engineer resourcing levels necessary to, among other things, facilitate the delivery of this programme of investment.

1.27 If that remains the case in our Final Decision, the draft Performance Plan may be consistent with the Union-wide target provided that any variance from the target trends is solely related to measures required to achieve the capacity targets.

1.28 The DUC for Terminal services shows a similar short-term trend with a CAGR between 2024 and 2029 of +2.4%. The reasons for this proposed target trend are similar to those described above for En Route.

Unit Rate Forecasts

1.29 Based on our draft determined cost proposals, we forecast that the En Route unit rate will increase in nominal terms from €28.78 in 2024 to €32.75 in 2025, and then to €35.64 by 2029. In real terms, this means that the unit rate

increases from €27 in 2024 to €30 in 2025, and then stays flat at €30 across RP4. The unit rate is consistently higher than the unit cost as a result of unrecovered revenues relating to 2020 and 2021, as decided at EU level during RP3.

1.30 We forecast that the Terminal unit rate will decrease in nominal terms from €184.90 in 2024 to €167.19 next year, and then to slowly increase back to €185.73 by 2029. In real terms, this means that the unit rate falls from €172 this year to €152 next year, and then marginally increases to €156 by 2029. While Terminal unit costs are also forecast to increase, this is offset by downward adjustments to the unit rates relating to traffic risk sharing, and the return of capital costs associated with unspent Capex over RP3.

Consultation

1.31 This is a consultation document. We anticipate that changes will be made to these proposals on the basis of consultation submissions and feedback. Responses may address any aspect of our proposals.

1.32 Written submissions should be received no later than **23 August 2024**. Responses should be sent by email to consultation@iaa.ie.[2] Parties should note that the timeline for submission of the draft Performance Plan is tight, and, for that reason and to ensure fair procedures, we are unlikely to facilitate any requests for extensions to the deadline for submissions. A statutory consultation meeting will take place on Friday 2 August 2024.[3]

[2] We may correspond with those who make submissions, seeking clarification or explanation of their submissions, and reference or use the contents as required in decision documents or reports. Ordinarily, we place all submissions received on our website. If a submission contains confidential material, it should be clearly marked as confidential and a redacted version suitable for publication should also be provided. We do not ordinarily edit submissions. Any party making a submission has sole responsibility for its contents and indemnifies us in relation to any loss or damage of whatever nature and howsoever arising suffered by us as a result of publishing or disseminating the information contained within the submission.

[3] For any consultees who wish to attend but have not yet registered, details are available here: Ireland: Stakeholder consultation on draft performance plan for RP4, actual costs 2023, cost risk sharing 2023, unit rates 2025 - European Commission (europa.eu)

2. Introduction and Approach to Regulation

2.1 This section provides an overview of the context for the development of the RP4 Performance Plan, both at a European level and specifically in Ireland. It then sets out the process followed by the IAA to date and the next steps, the basis of our general approach to the Performance Plan, as well as providing a guide to this phase of the consultation.

Single European Sky Performance and Charging Framework

2.2 The Single European Sky (SES) initiative is aimed at improving air traffic management performance and reducing airspace fragmentation across Europe. Under the performance and charging framework, targets are set on performance across four key performance areas (KPAs):

- Capacity
- Environment
- Cost-efficiency
- Safety

2.3 The framework for RP4 is established at Union level through various legislative instruments, in particular:

- Regulation 549/2004, which lays down the framework for the creation of the SES performance and charging system.[4]
- Regulation 317/2019 (the '2019 Regulation'), which lays down the detailed processes, rules, and principles for the performance and charging system.[5]
- An implementing decision which sets the Union-Wide targets for each KPA. The targets for RP4 have been set by Commission Implementing Decision (EU) 2024/1688 (the 'Implementing Decision').[6]

2.4 The 2019 Regulation provides for the setting of Union-wide performance targets for the provision of air navigation services. These targets are set by the European Commission, on the advice of the Performance Review Body (PRB). National Supervisory Authorities (NSAs) then develop draft Performance Plans setting local targets which contribute to the achievement of the Union-wide targets. The IAA is the National Supervisory Authority (NSA) for Ireland under the SES Regulations.

2.5 Article 7 of the 2019 Regulation provides that targets are to be set for 5-year periods known as reference periods. The current reference period (RP3) runs between 2020-2024. The upcoming reference period (RP4) will commence in

[4] Regulation - 549/2004 - EN - EUR-Lex (europa.eu)
[5] COMMISSION IMPLEMENTING REGULATION (EU) 2019/ 317 - of 11 February 2019 - laying down a performance and charging scheme in the single European sky and repealing Implementing Regulations (EU) No 390 / 2013 and (EU) No 391 / 2013 (europa.eu)
[6] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202401688

2025 and continue until the end of 2029.

2.6 The Performance Plan must include targets in respect of the defined Key Performance Indicator(s), or KPI(s), in each of the Safety, Environment, and Capacity KPAs. Under the Cost Efficiency KPA, the NSA must submit a Performance Plan which outlines the Determined Costs of the ANSP(s) and any eligible state or oversight costs. The NSA must also provide an inflation and traffic forecast, which, in combination with the cost estimates, allows for the calculation of a 'determined unit cost' in real terms, which is the cost efficiency KPI. Our proposals in respect of determined costs estimates and targets for each KPI are set out in this paper.

ANS Provision and Oversight in Ireland

2.7 Until 1 May 2023, air navigation services were provided by the Air Navigation Services Provider (ANSP) within the IAA. The Commission for Aviation Regulation (CAR) was Ireland's independent economic aviation regulator and responsible for regulatory oversight of SES through its role as joint NSA alongside the IAA's Safety Regulation Division (SRD).

2.8 From 1 May 2023, pursuant to the Air Navigation and Transport Act 2022, CAR was dissolved, and its regulatory functions, responsibilities, and staff were transferred to the IAA. At the same point, the ANSP functions of the IAA were transferred to a new company, AirNav Ireland. Consequently, the RP4 Performance Plan will be developed by the IAA, in its role as NSA and the single and fully independent civil aviation regulator, responsible for safety, security, and economic oversight. AirNav Ireland is the company which will provide air navigation services during RP4.

2.9 For ease of reference, we now refer consistently to the ANSP as 'AirNav Ireland', and to the NSA as the 'IAA'. References to performance, actions, or decisions pre-dating 1 May 2023 should be understood to relate to those of the IAA ANSP, and CAR/IAA SRD, respectively.

Approach for Developing the Irish Draft Performance Plan for RP4

Process and Timeline

2.10 In line with the 2019 Regulation, a draft Performance Plan for RP4 must be submitted to the European Commission by 1 October 2024. The IAA has therefore developed a process and a timeline which is summarised below.

Figure 2.1: Timeline for RP4 Draft Performance Plan

2.11 In June 2023, we published a consultation on the proposed timeline for the development of the draft Performance Plan. In January 2024, we then

published an initial consultation paper in which we provided an overview of performance over RP3 and set out our proposed approaches, in principle, for RP4 (the 'Issues Paper'). We received responses from AirNav Ireland, the AirNav Ireland staff panel, Ryanair, and Aer Lingus, which are also published on the RP4 page. These submissions are considered in subsequent sections. We also consider the RP4 guidance material from the European Commission, the PRB, and EASA, which is addressed in relevant sections.

2.12 As per the above timeline, we now publish the Draft Decision on the draft RP4 Performance Plan. A final draft Performance Plan will be issued to the European Commission by 1 October 2024, incorporating stakeholder feedback received by the IAA.

Scope of Performance Plan

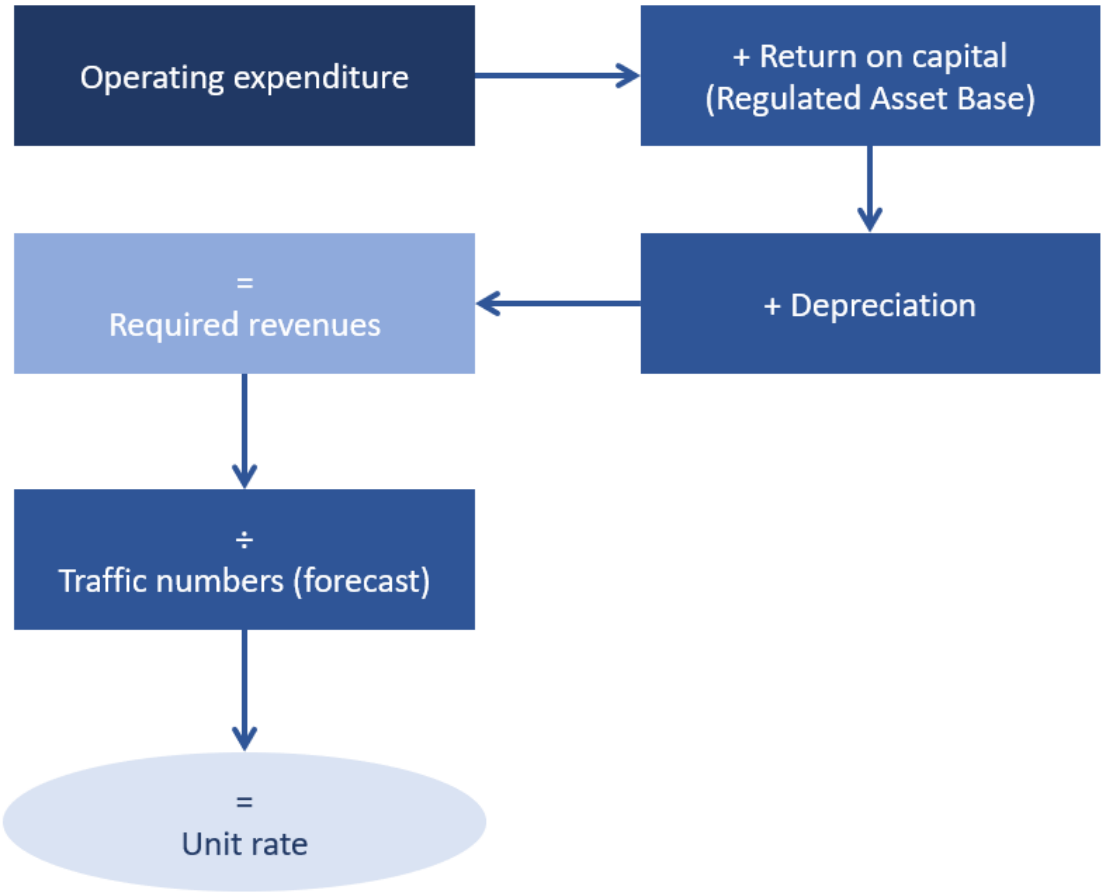
2.13 As proposed in the Issues Paper, the scope of the Performance Plan will be unchanged from RP3. It will therefore include En Route air navigation services in the Shannon Flight Information Region (FIR), and Shannon Upper Information Region (UIR) which encompasses FL245 and above. It also covers Terminal air navigation services provided at Dublin, Shannon and Cork airports. The latter two airports are not mandatory inclusions, given their size, but have been included in performance plans to date in a single Terminal charging zone. No responses to the Issues Paper proposed any amendments to the charging zones.

2.14 Shanwick Oceanic airspace, in which AirNav Ireland provides North Atlantic Communications (NAC) services, is outside the scope of the Performance Plan. Consequently, associated costs and revenues have been excluded.

Building Blocks Approach

2.15 To set the maximum unit rates for a given reference period, we use the building blocks approach to RAB-based regulation, as required by the 2019 Regulation. The building blocks approach requires forecasts of future operating expenditures and traffic. It also requires decisions on amounts to allow for a return on capital and for depreciation. The 2019 Regulation also provides for several other adjustments when calculating unit rates for the year, but the approach is broadly illustrated below.

Figure 2.2: The Building Blocks Approach – Deriving a unit rate



2.16 As addressed further below, the Performance Plan will be based on various assumptions which are designed to identify cost drivers and project these forward. Examples of such drivers are required staffing levels, unit payroll costs, and the likely level of efficient investment in new infrastructure. It is important not to confuse the detailed estimation of these drivers with any suggestion that the Performance Plan imposes a specific requirement to, for example, implement a particular staffing level, pay level, or operational process or strategy. There is no binding requirement on the regulated entities to follow these assumptions precisely when making decisions on how to operate during RP4.

2.17 Relatedly, the process of aggregating a large number of forecasting assumptions is an important part of managing uncertainty within and across the building blocks. Provided that the forecasting assumptions are unbiased, at each step of aggregation, there is an opportunity for outturn variance to net off against other outturn variance. It is expected that developments within the period will include both unanticipated/under-anticipated cost increases, as well as unanticipated cost savings or underspends, within individual line items.

2.18 This can be seen in, for example, the AirNav Ireland actual non-staff Opex for 2023, where individual line items were in some cases materially different from our forecast for that individual line item, but at an overall level, it is very close to the forecast for 2023 as estimated in 2021.

2.19 Nonetheless, given the possibility that downside financial risk may materialise, it is important to consider what may happen in a scenario of material downside risk, and to assess whether the Performance Plan will remain fit-for-purpose in such a scenario. In particular, for the decision to remain fit-for-purpose, the impact should be limited to profitability, rather than the financial capability to provide a safe service at an appropriate level of service quality. This is addressed in Section 12. As noted above, where an extreme event such as the Covid-19 pandemic materialises, this is likely to require a reopening of the decision, as occurred during RP3.

2.20 More specific to the development of the RP4 Performance Plan for Ireland, the question of appropriate cost allocation is particularly relevant in circumstances where all of the entities within the scope of the Performance Plan also provide services which are outside the scope of the Performance Plan. Additionally, there should be no cross-subsidisation between the En Route and Terminal charging zones. We have reviewed the cost allocation methodologies in respect of each cost area and laid out our draft assessment in the relevant sections. We apply the proposed cost allocation methodologies in developing the draft cost forecasts. Thus, in effect, the building blocks approach is applied twice, in respect of both the En Route and Terminal charging zones.

2.21 Finally, the question of interdependencies is a key element of the development of any regulatory price control under incentive regulation. We intend to develop a Performance Plan which is internally consistent with regard to the four KPAs, noting the interdependencies that exist between the KPAs, as well as across the building blocks. For example, the same traffic forecast has been used in the traffic building block and within the CEPA/Think Opex forecast. The question of interdependencies is addressed further in Section 13.

Allocation of Risk

2.22 In the context of economic regulation, the allocation of risk refers to the extent to which each party, the regulated entity or its customers, bears the financial detriment/benefit of outturn traffic or costs varying from the forecasts underpinning the price control decision. The extent to which the regulated entity is exposed to financial risk is taken into account and remunerated through the regulatory cost of equity, as described further in this case in Section 5.

2.23 The 2019 Regulation is generally prescriptive in how risk should be allocated, as follows:

- Traffic risk is shared between the ANSP and airspace users, with the risk of large deviations (10% or more) allocated fully to airspace users.
- Operating cost risk is generally assigned to the ANSP, with a number of exceptions and potential exceptions, including the costs of regulatory oversight provided by the NSA and services provided by Eurocontrol, which are allocated to airspace users. There are also potential exemptions in respect of changes in pension costs or other ‘unforeseeable new cost items not covered in the performance plan but required by law.’
- Capital cost risk is assigned to the ANSP within the reference period, but

then adjusted subsequently based on any underspend/overspend, subject to certain conditions. There are also protections available to ANSPs in relation to changes in interest rates and tax rates.

- The extent to which ANSPs are exposed to cost risk is further mitigated through inflation risk being assigned to airspace users; where inflation is higher than was forecast within the Performance Plan, there is a corresponding upward adjustment to the unit rates, and vice versa (but this is asymmetrical in that deflation would not be adjusted for).
- The extent to which ANSPs are exposed to risk is more broadly mitigated by the provisions in the 2019 Regulation which allow for the Performance Plan to be reopened where circumstances change significantly within the period, including a deviation of 10% or more from forecast traffic levels.

2.24 Some aspects of risk allocation are mandatory under the 2019 Regulation. In other cases, such as traffic risk, there is a default allocation which can be varied by the NSA to a certain extent. For RP4, we broadly propose to allocate such risks in line with the default, while taking account of the risk allocation where appropriate.

2.25 Outturn costs will always vary somewhat from the forecasts, but it is also important to note that such variation is designed to be self-compensatory to a certain degree. For example, where traffic is exceeding the forecast, this will generate additional revenue for the ANSP, which it can then use to fund the likely upward pressure on operating costs required to service the additional traffic.

2.26 The forecast cost requirements should therefore be estimated such that there is an approximately symmetrical balance of upside and downside risk, with a good prospect that the ANSP will be able to earn the reasonable level of profit implied by the regulatory cost of capital:

- If it outperforms the forecast assumptions on a net basis and/or if upside risk materialises, it will be able to earn additional profit.
- If it operates inefficiently and/or if downside risk materialises, it will earn less profit. It is unlikely to make a loss, noting that even in 2020, at the peak of the impact of the Covid-19 pandemic, AirNav Ireland ultimately made a modest profit.

2.27 Establishing the forecasts and the risk allocation for a five-year period provides certainty and clarity to all parties, and also provides an incentive to the ANSP to try to outperform the assumptions on a net basis and respond optimally to changing circumstances. It follows that the regulator should be slow to reopen the decision once it is made, which would create uncertainty, add regulatory risk to the financial risk profile, and weaken the incentive to improve performance. The regulator should also avoid retrospectively changing some of the rules or assumptions which formed the basis of the decision. Differences between forecasts and outturns might simply reflect the materialisation of ordinary business risk which is remunerated through the cost of equity, or on the other hand might reflect that the ANSP is performing better than was

reasonably expected of it and should be rewarded accordingly.

Guide to Consultation Material

2.28 The published consultation material for the Draft Decision consists of the following:

- This Draft Decision document. Sections 3 to 6 address the traffic and AirNav Ireland cost building blocks. Section 7 provides our draft assessment of Met Eireann cost inputs, and section 8 sets out the proposed NSA, State, and Eurocontrol costs. Sections 9 to 12 then address each of the four KPAs in turn. Sections 13 and 14 address interdependencies, and traffic risk sharing/incentive schemes. The appendix provides our review of the individual projects within AirNav Ireland's investment programme.
- A draft report from CEPA, supported by Think, who are leading the assessment of the AirNav Ireland Opex forecasts.
- The final RP4 Business Plan submissions from AirNav Ireland and Met Eireann ASD.
- The main Performance Plan excel model, which includes the En Route and Terminal reporting tables for RP4.

2.29 We invite submissions on all of the above, which will be taken into account when the draft Performance Plan is being finalised, and which we will address directly in our accompanying Final Decision documents, including giving reasons why particular submissions have been accepted or not accepted.

2.30 The Performance Plan financial model is fully interactive. We encourage stakeholders to make use of this model to fully understand the proposed draft Performance Plan, and to test the sensitivity of determined costs, unit rates, and financial performance to changes within areas such as the WACC components, cost allocation keys, new Capex and asset lives, operating cost inputs, traffic levels, and unit rate adjustments.

2.31 Each of the 'AirNav Ireland', 'MET', and 'Supervision' sections of the model feed the determined cost tables proposed for each entity. As per the reporting tables, the total determined costs are then summed in the 'Total DC' section. The AirNav Ireland proposals, as modelled by us, have also been included on separate sheets for comparison purposes.

2.32 The 'UR' section then compiles the various aspects of the regulatory model and our proposed application of these aspects to calculate forecast unit rates, after applying relevant unit rate adjustments, as per the RP4 reporting tables. Finally, the 'Summary' section, at the front of the model, summarises and displays the resulting unit rate and cost forecasts from a number of perspectives, as well as assessing the AirNav Ireland regulated entity forecast coverage ratios and cash flow.

3. Inflation and Traffic Forecasts

3.1 In this section, we address the inflation and traffic forecasts for RP4. This includes a review of outturn performance against the RP3 Performance Plan assumptions, and a discussion on the approach for RP4. We also address submissions received in response to the RP4 Methodological Consultation and Issues Paper (the 'Issues Paper'), published 22 January 2024.[7]

Inflation

Issues paper

3.2 In line with Article 2(11) and Article 26 of Regulation 317/2019, and as proposed in the Issues Paper, we propose to again use the latest available forecast of average Consumer Price Index (CPI) change from the International Monetary Fund (IMF). We did not receive any submissions on this point in response to the Issues Paper.

Inflation Overview

3.3 In 2021, actual inflation of 2.4% was 0.8 percentage points higher than forecast in the RP3 Performance Plan (1.6%). In 2022, the difference in actual inflation was much greater, with actual inflation of 8.1% being 6.2 percentage points higher than forecast (1.9%). The trend of actual inflation exceeding the forecast rate persisted into 2023, but to a lesser extent than in 2022, with the actual rate of 5.2% in 2023 surpassing the forecasted 2% by 3.2 percentage points.

3.4 In the RP3 Performance Plan, inflation for 2024 was also forecast to be 2%. In April 2024, the IMF forecast that inflation in Ireland would average out at 2.4% in 2024. The forecast annual inflation rates for RP4 are presented below, together with RP3 actuals.

Table 3.1: Actual and Forecast Inflation

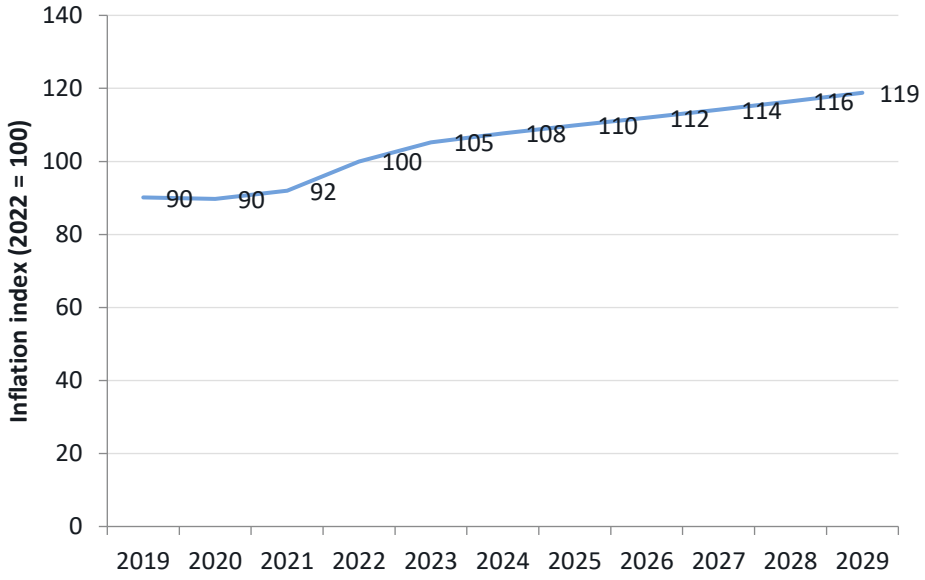
Actual				Forecast				
2021	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**
2.41%	8.05%	5.21%	2.38%	2.00%	1.95%	1.96%	1.98%	2.00%

Source: IMF

3.5 The inflation index (2022=100) reached 105 in 2023 which is 3% above the forecast level (102). Using 2022 as a baseline, the inflation index is expected to reach 119 in 2029.

[7] January 2024 Issues Paper

Figure 3.1: Actual and Forecast Inflation Index



Source: IMF, IAA Calculations

3.6 In line with Article 2(11) and Article 26 of Regulation 317/2019, and as proposed in the Issues Paper, we intend to use the latest available forecast of average Consumer Price Index (CPI) change from the International Monetary Fund (IMF) in the RP4 Performance Plan. The latest available forecast is from April 2024, as laid out above.

Traffic Forecasts

Issues paper and Responses

3.7 In line with Article 10(2(f)) and Article 10(2(g)) of the 2019 Regulation, in the Issues Paper, we proposed to again use the latest available STATFOR base forecast of En-Route and Terminal service units and IFR movements for the RP4 traffic forecast.[8]

3.8 In submissions to the Issues Paper, Aer Lingus, AirNav Ireland and Ryanair, and agreed with our proposed approach to the traffic forecasts. AirNav Ireland noted that further consideration would be required during the consultation in relation to the Terminal traffic forecast in light of the current passenger cap at Dublin Airport (this is discussed further below).

3.9 Aer Lingus suggested that the forecast should be supplemented, especially in early years, with airline forecasts/planned fleet deployment.

3.10 The AirNav Ireland Staff Panel agreed that the STATFOR forecast should be used, but, given the actual traffic values in both RP2 and RP3 were significantly

[8]A service unit is a measure used to quantify the air traffic services provided to an aircraft by an ANSP. En Route service units are based on the distance flown by an aircraft and the aircraft's Maximum Takeoff Weight (MTOW), while terminal service units do not include the distance component. Service units allow for a standardised method of fee collection such that ANSPs can bill airlines fairly for the air traffic services it provides.

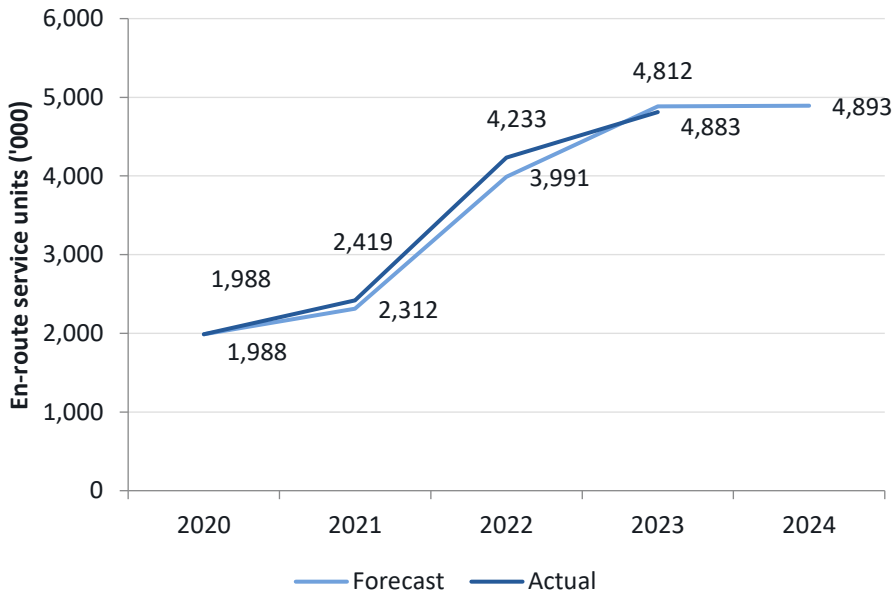
higher than forecast, the IAA should use the 'high' scenario.

RP3 Outturn Analysis

3.11 In 2021 and 2022, the actual number of En Route service units in Ireland exceeded forecast levels by 4.6% and 6.1% respectively. In 2023 this trend was reversed when the total number of service units for the year (4.81m) was marginally (1.5%) below the forecast of 4.88m.

3.12 While the February 2024 STATFOR forecast has since revised upwards the forecast number of En Route service units for 2024 by 3.2% to 5.05m, the analysis below is representative of the October 2021 forecast which was used in the revised RP3 performance plan.[9]

Figure 3.2: RP3 En Route Service Units ('000s) forecast vs. actual

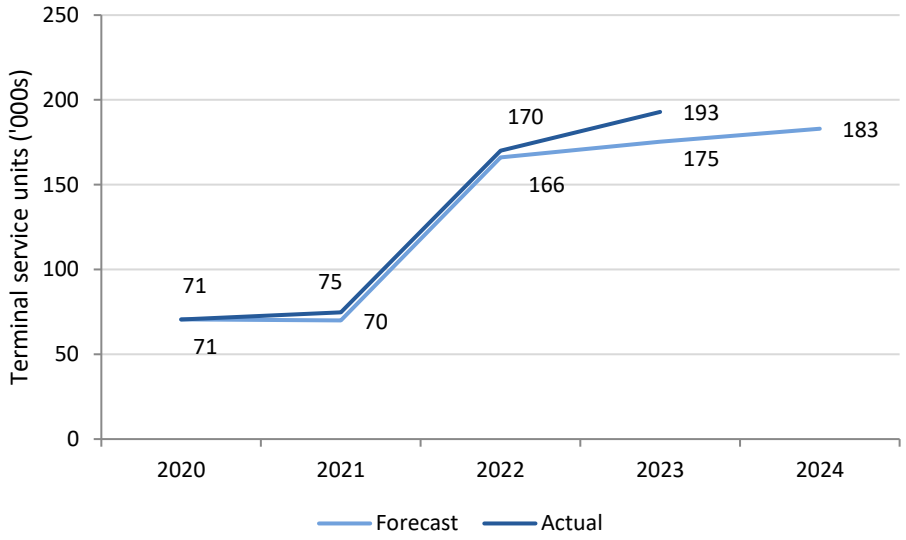


Source: RP3 Performance Plan, Eurocontrol

3.13 Similarly, Terminal service units exceeded forecast levels in 2021 and 2022 by 6.8% and 2.3% respectively. Unlike En Route service units, the growth in Terminal service units continued into 2023, with the total number of Terminal service units (193k) exceeding the forecast by 10%. Illustrated below is the STATFOR October 2021 traffic forecast, which anticipated Terminal service units of 183k for 2024. It should be noted that the February 2024 STATFOR base scenario now projects that the annual number of Terminal service units in Ireland will increase to 205k in 2024. Should this anticipated growth materialise, it will result in a 6.3% year on year growth in Terminal service units versus 2023 actuals.

[9] Revised Irish performance plan (October 2021 STATFOR forecast)

Figure 3.3: RP3 Terminal Service Units ('000s), forecast vs. actual



Source: RP3 Performance Plan, Eurocontrol

Approach for RP4 Forecasts

3.14 In line with Article 10(2(f)) and Article 10(2(g)) of the 2019 Regulation, and the approach suggested in the Issues Paper, our Draft Decision is to use the latest available STATFOR base forecast of En Route and Terminal service units, and for IFR flight forecasts. The most recent STATFOR forecast currently available is from February 2024.

3.15 While Article 10 (2) of the 2019 Regulation allows the NSA to use traffic forecasts other than the STATFOR base scenario, where the NSA elects to apply a different traffic forecast, it requires that "*Any differences with the Eurocontrol's STATFOR base forecast shall be related to specific local factors not sufficiently addressed by Eurocontrol's STATFOR base forecast*". We do not see a compelling argument to diverge from the default STATFOR base scenario. As mentioned above, this is also the forecast used by AirNav Ireland in its Business Plan.

3.16 We note the suggestion from Aer Lingus to take further account of airline projections. We have done so previously when forecasting passenger numbers at Dublin Airport, based on slot filings. However, the STATFOR February 2024 forecast incorporates traffic trends up to January 2024, considers inputs such as economic growth, load factors, propensity to fly, demographics, events/trend changes, high-speed rail network developments, market segment developments and airport capacity constraints. It also considers airline plans through airline routings and airline fleet changes. Furthermore, the forecast takes account of relevant events such as EURO2024 and the Summer Olympics while also factoring in the impact of geopolitical conflicts on aviation. We consider that the forecast already takes adequate account of airline projections.

3.17 We also note the position of the AirNav Ireland staff panel to apply the 'High'

traffic scenario. The nature of the Traffic Risk Sharing (TRS) mechanism, which is provided for under Article 27 of the 2019 Regulation, allows for the ANSP to recover additional revenue from airspace users in the event that actual traffic exceeds the forecast. In RP3, AirNav Ireland has been capable of managing traffic above forecast levels even without fully achieving the IAA's forecast ATCO staffing requirements. As set out in Section 4, our forecasting assumptions include significant additional resilience in staffing numbers compared to actual staffing in 2023. If AirNav Ireland is successful in increasing the level of operational staff for RP4 in this manner, it is likely that it would be capable of handling traffic levels similar to the 'High' STATFOR scenario without impacting the quality of its service delivery.

3.18 The STATFOR February 2024 RP4 traffic forecast along with 2023 actuals is presented below.

Table 3.2: Eurocontrol Forecast 2024-2029, Base scenario (000's)

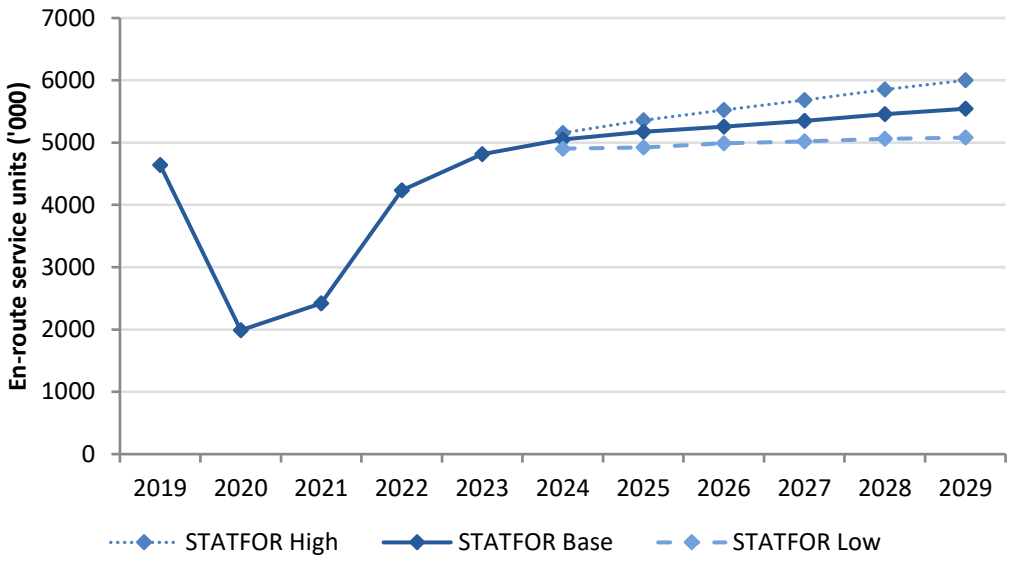
Metric	Actuals	Forecast					
	2023	2024	2025	2026	2027	2028	2029
IFR Movements (ENR)	664	701	723	738	752	769	782
YoY Change	14.1%	5.4%	3.2%	2.0%	1.9%	2.3%	1.7%
ENR Service Units	4,812	5,048	5,175	5,256	5,349	5,458	5,544
YoY Change	13.7%	4.9%	2.5%	1.6%	1.8%	2.0%	1.6%
IFR Movements (TER)	142	151	158	162	165	170	173
YoY Change	13.7%	6.6%	4.6%	2.6%	2.1%	2.7%	1.8%
TER Service Units	193	205	215	221	226	233	237
YoY Change	13.5%	6.3%	4.7%	2.9%	2.3%	2.9%	2.1%

Source: Eurocontrol Forecast February 2024

En Route

3.19 The three STATFOR traffic scenarios for En Route service units are illustrated in Figure 3.4 below. Even in the low traffic scenario, En Route service units are expected to exceed 2019 levels in each year of RP4. Under the base case forecast, by 2029, En Route service units will have increased by 19.5% compared to 2019. A high traffic scenario would see 6m service units by the end of RP4.

Figure 3.4: STATFOR forecast En Route service units ('000) for Ireland, February 2024



Source: Eurocontrol

3.20 Compared to the SES RP3/RP4 area for En Route service units, the latest STATFOR base forecast from February 2024 sees an Annual Average Growth Rate (AAGR) in RP4 for Ireland of 1.9% compared to a total SES RP3/RP4 area AAGR in RP4 of 2.7%.

3.21 Despite continued forecast growth throughout RP4, it is notable that the RP4 AAGR for Ireland (1.9%) is expected to be only marginally ahead of the RP3 AAGR (1.7%). In contrast, traffic across the SES area is anticipated to grow more rapidly with a forecast AAGR of 2.7% in RP4 which contrasts with the RP3 AAGR of 0.6% for the SES area.[10]

Table 3.3: STATFOR February 2024 Forecast, AAGRs

	AAGR RP3	AAGR RP4
Ireland	1.7%	1.9%
SES	0.6%	2.7%

Source: EUROCONTROL

Terminal

3.22 Figure 3.5 illustrates the three STATFOR scenarios for Terminal service units across RP4. Under the base scenario, the number of Terminal service units is expected to be 15.7% greater in 2029 than 2024.

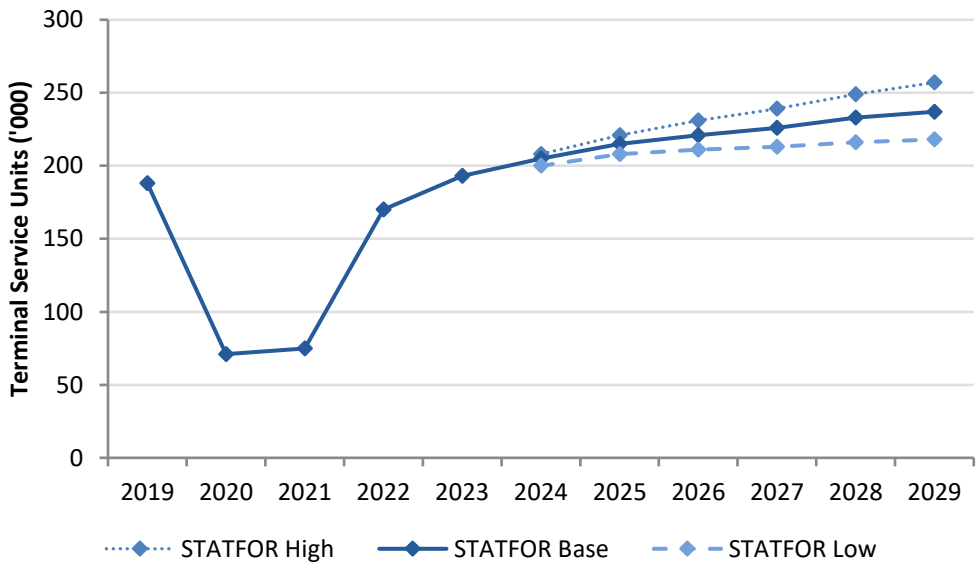
3.23 We note that current planning restrictions at Dublin Airport limit the combined capacity of Terminal 1 and Terminal to 32 million passengers per annum. daa, the airport operator of Dublin Airport, has applied to raise the capacity limit to 40 million passengers per year. The application is currently going through the

[10] The RP3 AAGR is comprised of actuals 2020-2023 & 2024 forecast traffic from Feb 2024.

planning process. To appropriately take account of these conditions, the IAA has introduced a Passenger Air Traffic Movement (PATM) seat capacity parameter of 14,405,737 seats for the Winter 2024 seasonal slot capacity declaration at Dublin Airport.[11]

3.24 There is a degree of uncertainty over the development of any constraint associated with these planning conditions, and the timing of any decision to amend them. They do have the potential to impact the number of aircraft movements at Dublin Airport during RP4. We note, however, that it is very difficult to predict what this impact might be relative to the STATFOR forecast of Terminal service units, and that the Terminal charging zone also includes Cork and Shannon airports, which are subject to no such limitations. We thus propose to accept the position of AirNav Ireland to plan for RP4 Terminal traffic levels based on the STATFOR forecast without attempting to further take account of any passenger limit constraints.

Figure 3.5: STATFOR forecast Terminal service units ('000) for Ireland, February 2024



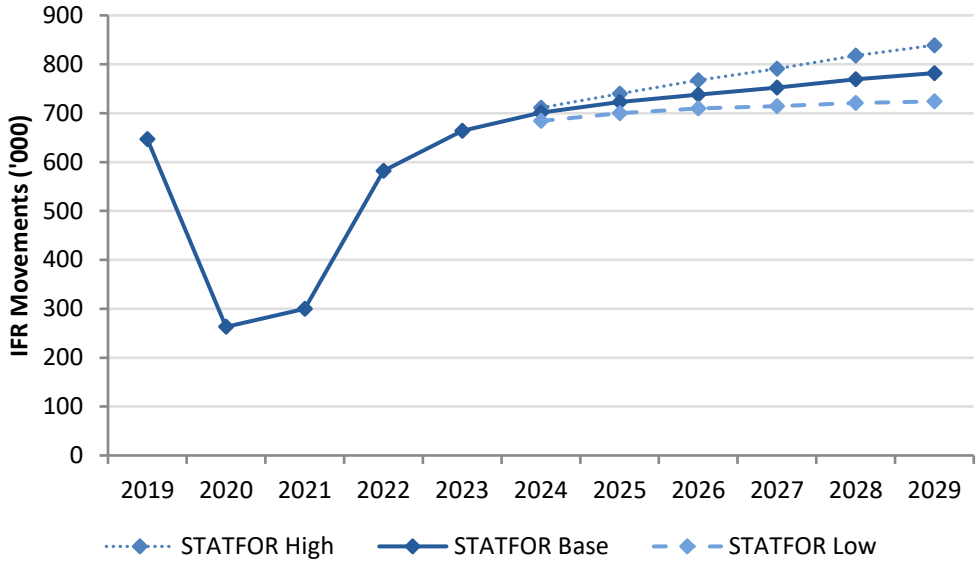
Source: Eurocontrol

IFR Movements

3.25 Irish IFR movements, throughout RP3 and forecast for RP4 under the three STATFOR scenarios, are shown in Figure 3.6 below. Under the base scenario, IFR movements are expected to grow but at a decreasing year-on-year rate from 2025-2027 (from 3.2% in 2025 to 1.9% in 2027). The base scenario forecasts that IFR movements will grow by a more significant 2.3% in 2028 to 0.77m movements. The base scenario would see an increase of 11.6% in IFR movements in 2029 compared to the forecast 2024 level.

[11] Winter 2024 coordination parameters at Dublin Airport

Figure 3.6 Ireland IFR Movements, RP3 & RP4 Scenarios



Source: Eurocontrol STATFOR February 2024

4. AirNav Ireland Operating Expenditure

4.1 In this section, we provide an overview of our proposals in relation to AirNav Ireland operating costs (Opex) for RP4. Our proposals are based on forecasts developed by CEPA, supported by Think.[12] We provide an overview of the draft CEPA report which considers AirNav Ireland's past operating costs trends, assesses AirNav Ireland's operating cost forecasts for RP4 as set out in its Business Plan, and provides draft Opex forecasts for RP4. We then lay out the proposed allocation of these costs between the Terminal and En Route cost bases.

4.2 As set out in Section 2, while these forecasts are being developed on a bottom-up basis with reference to inputs such as staffing requirements, unit payroll cost trajectories, and a detailed forecast of efficient non-staff cost lines, this should not be misunderstood as a prescriptive exercise in which AirNav Ireland is bound to follow these input assumptions over RP4. It is up to AirNav Ireland to ultimately decide how and where resources should go, and react appropriately to developing circumstances as RP4 unfolds. For example, if traffic were to trend significantly above the forecasts underpinning the Performance Plan, AirNav Ireland might respond to this by increasing ATCO staffing levels further beyond the ATCO forecast underpinning the Performance Plan.

Summary

4.3 We forecast that real Opex should increase from €119m in 2023 to €140m by 2029, which is €12m less than AirNav Ireland's forecast of €152m for the same year. Nonetheless, our draft assessment is broadly supportive of AirNav Ireland's position that its operation in 2023 was under-resourced with respect to ATCOs, which led to, among other things, a deterioration in capacity performance, an overreliance on overtime with limited operational resilience, and was likely a contributing factor to the under-delivery by AirNav Ireland of its proposed investment programme. This assessment remains consistent with our 2021 analysis of the optimal level of ATCOs for 2023, which was 319 (actual 2023 traffic levels were close to the RP3 traffic forecast). The CEPA/Think forecasts are based on delivering a significant but achievable step change in total ATCOs, from AirNav Ireland's actual staffing level of 296 in 2023 to 326 in 2025, further increasing to 353 by 2029.

4.4 For engineering and corporate services staff, CEPA assesses that AirNav Ireland's suggested increases in headcount over RP4 appear disproportionate to requirements. As such, the forecast of efficient staffing levels in these two areas is below AirNav Ireland's proposal, but still represents increases in both compared to 2023 outturn, and by 2029 the draft forecast of engineers closely aligns with AirNav Ireland's assumption.

4.5 Accordingly, base payroll and pension costs are forecast to rise in real terms over RP4. However, given the upward step-change in ATCOs, overtime costs are forecast to fall from the 2023 outturn. An assessment of efficient baseline

[12] CEPA is a consultancy firm specialising in operating cost efficiency assessment and forecasting, particularly in the aviation sector. Think is a specialised air traffic management and airports consultancy.

unit payroll costs found scope for efficiency improvement for corporate services. Consequently, a 5% efficiency challenge to these unit costs is proposed for RP4.

4.6 AirNav Ireland is proposing a step-change in headcount to account for a new staffing requirement relating to the return of the Flow Management Position and Airspace Management Cell functions which were previously provided by NATS in respect of Irish airspace. We adopt this step change in our assessment.

4.7 CEPA forecasts that Other Operating costs will also increase throughout RP4, albeit to a lesser extent than the increase forecast by AirNav Ireland. Disaggregating costs into individual components, CEPA's assessment closely aligns with the AirNav Ireland forecasts on some cost lines, whereas others show more substantial variance. As a result, over RP4, the CEPA forecast of efficient Other Opex is 11% lower than that proposed by AirNav Ireland.

4.8 On this basis, we propose to accept that total Opex should increase in real terms (i.e. faster than inflation) throughout RP4, although the efficient level forecast by CEPA is below that proposed by AirNav Ireland. Nonetheless, total Opex is forecast to increase by approximately 10% in real terms over RP4, which is slightly more than the forecast 8% increase in IFR movements over the same period. While we would ordinarily expect total Opex to respond more inelastically to traffic growth, in this case the top-down finding is consistent with the assessment that the starting point is an under-resourced operation.

Table 4.1: Total, En Route and Terminal Operating Costs, € million

Source	Zone	2023A	2024	2025	2026	2027	2028	2029
IAA Draft Decision	En Route	99.9	102.6	108.0	113.8	113.4	116.2	118.5
	Terminal	18.9	19.1	20.2	21.3	21.1	21.5	22.0
	Total	**118.8**	**121.6**	**128.1**	**135.1**	**134.4**	**137.7**	**140.5**
AirNav Ireland Business Plan	En Route	99.9	103.1	113.6	120.1	120.8	123.6	127.8
	Terminal	18.9	19.6	21.6	22.8	22.8	23.4	24.3
	Total	**118.8**	**122.7**	**135.2**	**142.9**	**143.6**	**147.1**	**152.1**

Source: CEPA, IAA, AirNav Ireland RP4 Business Plan. Real 2022 prices. 2023 is an outturn.

Draft CEPA Report

4.9 The draft CEPA report looks to identify an efficient but achievable level of Opex for AirNav Ireland over RP4, which is consistent with delivering a high-quality service in a safe manner. It consists of three main components; staff numbers, unit payroll costs, and Other Operating expenditure (i.e. operating expenditure which is not staff costs). CEPA builds up the estimate of efficient expenditure by separately examining the efficiency of historic trends in each cost component, before projecting each item forward using various cost drivers, elasticities and an assessment of suggested step-changes. The report and the forecasts will be finalised taking account of submissions received in response to this Draft Decision.

Background Analysis

4.10 To fully understand AirNav Ireland's cost base, CEPA assessed actual costs and staffing data provided by AirNav Ireland for 2020-2023. This data was supplemented by further historic data from previous reference periods to better understand trends in expenditure. Data provided included annual staffing levels, associated payroll and pension costs, and other operating expenditure by non-staff category.

4.11 Normalising for differences in traffic and price levels between countries, CEPA found that, historically, AirNav Ireland's overall Opex has been in line with or below peer ANSPs throughout RP1, RP2, and RP3. However, this aggregation masks differences, with staff costs historically lower than the average of peer comparators, whilst non-staff costs have been higher. Combined with the finding that the ratio of ATCOs to non-ATCOs is relatively high, CEPA notes that this suggests that AirNav Ireland may be relatively more outsourced compared to other ANSPs.

4.12 Staff costs have been the primary component of AirNav Ireland's Opex over previous reference periods, accounting for approximately two thirds of this expenditure in 2023. Average unit payroll costs between 2016 and 2020 gradually increased, but fell sharply in 2021, due to the implementation of pay reductions in response to the Covid-19 pandemic. Restoration of pay to those subject to the reduction led to a sharp increase in unit payroll costs (including pension costs) in 2023, due to restoration being back dated. However, when this one-off payment for back dating is removed, real unit costs remained in line with those incurred in 2022.

Forecasting Staffing Requirements

4.13 In assessing efficiency in 2023, CEPA assesses that ATCO utilisation levels and roster efficiency were higher than sustainable in the long-term, with operations vulnerable to even small rates of attrition. As noted in Section 11, there was an increase in En Route ATFM delay in 2023, although the annual target was still met. It is also notable that there was an increase in the instances of 'zero-flow rates'[13] being imposed, which may not have a material impact on annual delay minutes per flight, but causes temporary disruption to airspace users.

4.14 As staffing requirements at Shannon ACC and Dublin Control Centre are more elastic to traffic relative to the two tower-only operations at Cork and Shannon airports, CEPA forecast and validated optimum ATCO resourcing separately, with different approaches[14]:

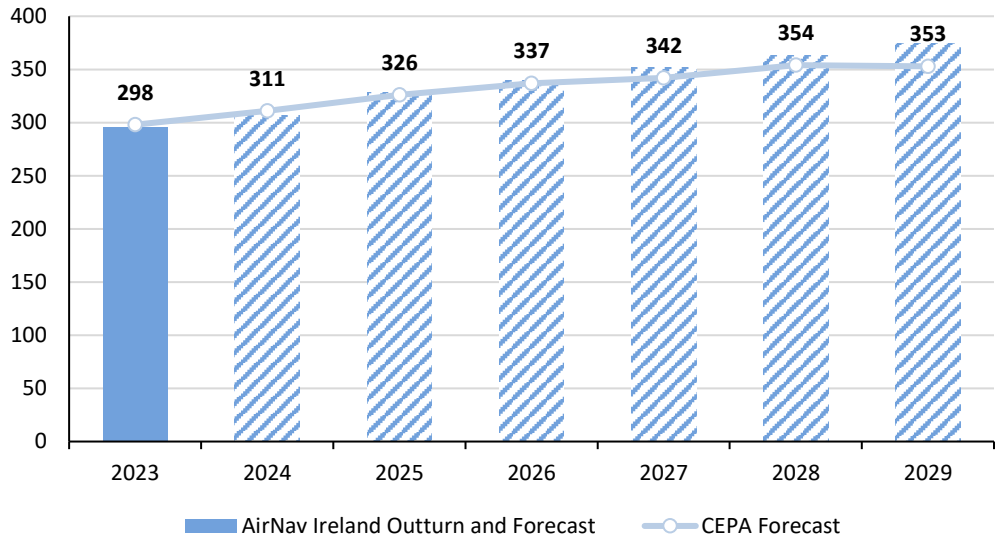
- For the ATCOs based at Shannon ACC and at Dublin, traffic levels were used as a key driver of headcount. Forecasting efficient operational ATCO staffing levels in this regard followed a three-step approach; first by

[13] A zero-flow rate restriction can be applied to an area if no ATCOs are available for a specified time. If such a restriction is applied, then no aircraft are permitted to fly through that area.
[14] The Dublin Control Centre includes both an ACC and Dublin Airport terminal services, located at the same site.

determining the optimum ratio of operational ATCOs to traffic movements, then applying this ratio based on traffic forecasts through RP4, and finally determining the efficient and achievable path of ATCOs from current level to the optimum level by taking into account any training and hiring constraints.

- To forecast ATCO staffing levels in relation to tower only operations at Cork and Shannon airports, CEPA focus on the forecast increases presented in AirNav Ireland's Business Plan and assessed these based on tests of need, additionality, and efficiency.

Figure 4.1: Forecast Efficient ATCO Headcount Compared to AirNav Ireland Forecast



Source: CEPA, IAA, AirNav Ireland RP4 Business Plan

4.15 Overall, CEPA forecasts ATCO headcount to increase from 298 in 2023 to 353 at the end of RP4. The forecast of efficient ATCO headcount is broadly similar to AirNav Ireland's forecast, with a slight spread emerging in the second half of RP4, and particularly in 2029, reflecting CEPA's assumption of enhanced ATCO productivity following the planned major investment in AirNav Ireland's ATM systems, as described in Section 6 and Appendix 1. Notwithstanding this, the overall difference between the two forecasts, which are based on different methodologies, is small, at less than 2%.

4.16 Engineers form the second largest staff cohort, and are responsible for day-to-day maintenance and supporting the development and delivery of capital projects. AirNav Ireland's engineering headcount grew from 76 in 2019 to 87 in 2023, but this remains slightly below the number we assumed in the RP3 Performance Plan.

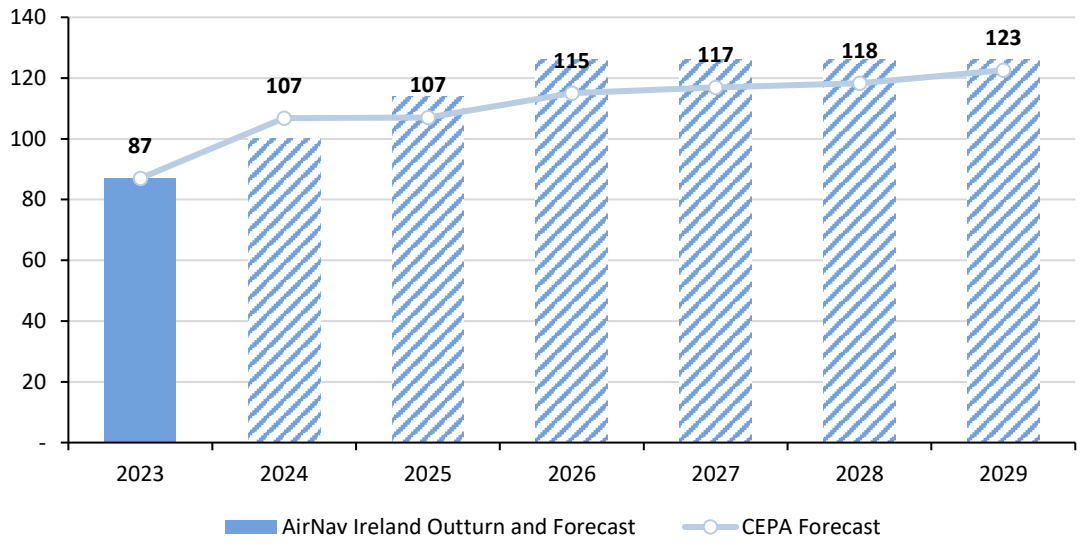
4.17 Given that engineers are responsible for day-to-day maintenance and the development of capital projects, we expect that the required number of engineers would be broadly linked to the size of AirNav Ireland's asset base and to Capex activity. As AirNav Ireland did not achieve full delivery of its RP3 investment programme and was also unable to achieve the full scale of the RP2 programme, CEPA make no efficiency adjustment to the engineering

headcount in setting an efficient baseline, implicitly assuming that the outturn 2023 headcount was proportionate to the scale of Capex delivered.

4.18 To produce an efficient forecast of engineering headcount, CEPA follows a four-step approach:

- Firstly, the average headcount over 2016–2023 is assessed, which results in an estimated headcount of 76 staff.
- This headcount is then adjusted to reflect the expected increase in the regulated asset base relative to the 2016–2023 average, using an elasticity of 0.5.
- Headcount is also scaled to reflect the average expected level of capital investment for the years (t+1) and (t+2) relative to the 2016 – 2023 average, using an elasticity of 0.15.
- Finally, an additional 7 engineers are included as a result of EU Regulation 2017/373, which was the subject of a granular assessment as part of our development of the revised RP3 Performance Plan in 2021.

Figure 4.2: Forecast Efficient Engineer Headcount Compared to AirNav Ireland RP4 BP



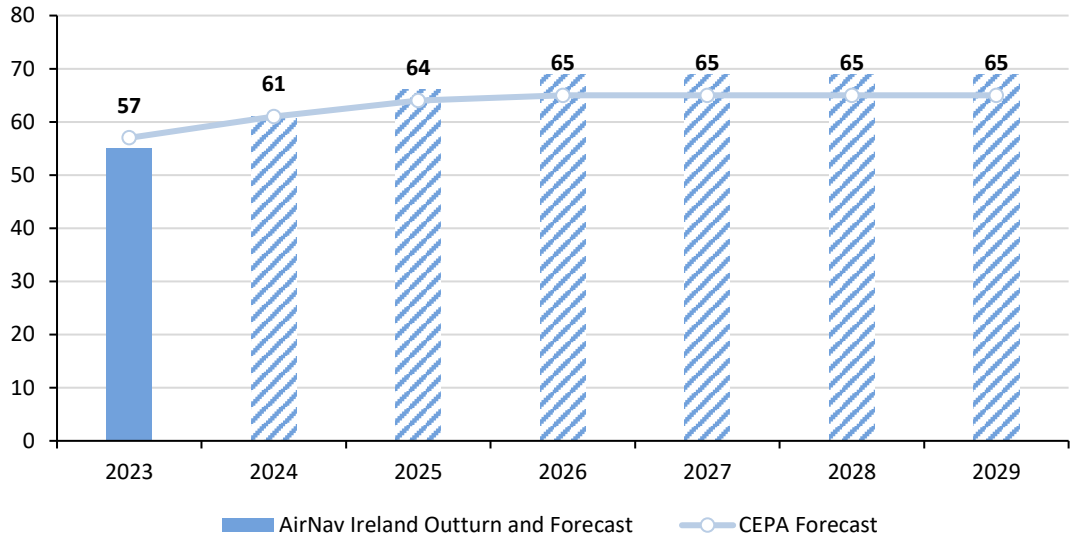
Source: CEPA, IAA, AirNav Ireland RP4 Business Plan

4.19 CEPA estimates an efficient engineering headcount profile which is materially higher than the current level, but lower than that proposed by AirNav Ireland for RP4. CEPA also forecasts efficient headcount of data assistants, corporate services (such as finance, human resources, etc), and operations management and support. The forecast efficient staffing levels in operations management and support, and data assistants, match those suggested by AirNav Ireland.

4.20 However, the CEPA forecasts of efficient corporate services headcount differ somewhat, as shown in Figure 4.3. This difference stems from CEPA assuming smaller step-increases throughout RP4 than those proposed by AirNav Ireland, based on an assessment of the 2023 efficient headcount baseline, whether the suggested new roles are genuinely additional, and the proportionality of these

estimates. CEPA forecasts headcount to reach 65 by 2026 and then to remain constant to 2029, while AirNav Ireland forecast headcount of 69 over this period.

Figure 4.3: Outturn and Forecast Corporate Services Headcount



Source: CEPA, IAA, AirNav Ireland RP4 Business Plan

4.21 The Flow Management Position (FMP) is responsible for the efficient management of airspace and the coordination of associated functions with the Network Manager. This is governed by EU Regulation 255/2010. The Airspace Management Cell (AMC) is a state function in accordance with EU Regulation 2150/2005, which is responsible for the management of segregated airspace. Currently, these functions are provided by NATS. This arrangement was made under the UK/Ireland FAB agreement. However, there is a requirement that the AMC function for a Member State is carried out in a Member State. Therefore, AirNav Ireland will take over this function from 2025. Accordingly, the forecasts assume a step increase of 5 staff in 2025, rising to 10 from 2026 onwards. CEPA consider this justification meets the tests of need and additionality and assess that the proposed scale of increase is broadly proportionate to the need.

4.22 We consider that this change in the scope of functions and the allocation of costs constitutes a baseline adjustment for the purposes of assessing the short and long term DUC trends, including with reference to the union-wide DUC target trends. This means that the 2019 and 2024 baselines should be adjusted upwards to be directly comparable to 2029 in this respect. Currently, the proposed adjustment reflects the estimated costs associated with the 10 staff only, however ahead of the Final Decision we will further consider whether any other forecast costs should be allocated to this baseline adjustment, such as capital costs and/or an apportionment of core costs.

Forecasting Operating Cost Requirements

4.23 To forecast efficient base payroll costs, CEPA combines the forecasts of efficient staff levels (discussed above) with those of efficient staff unit costs.

Efficient staff unit costs are forecast based on comparison of growth in unit payroll costs against earnings of relevant industries and roles, comparison of operational roles against other ANSPs, and comparison of AirNav Ireland's payroll bands against a range of public and private sector roles. Through this exercise, CEPA assessed that unit payroll costs for ATCOs were efficient in 2023. However, in non-ATCO roles, some scope exists for efficiency gains. Therefore, for the baseline unit payroll costs, a 5% efficiency challenge is applied to corporate services.

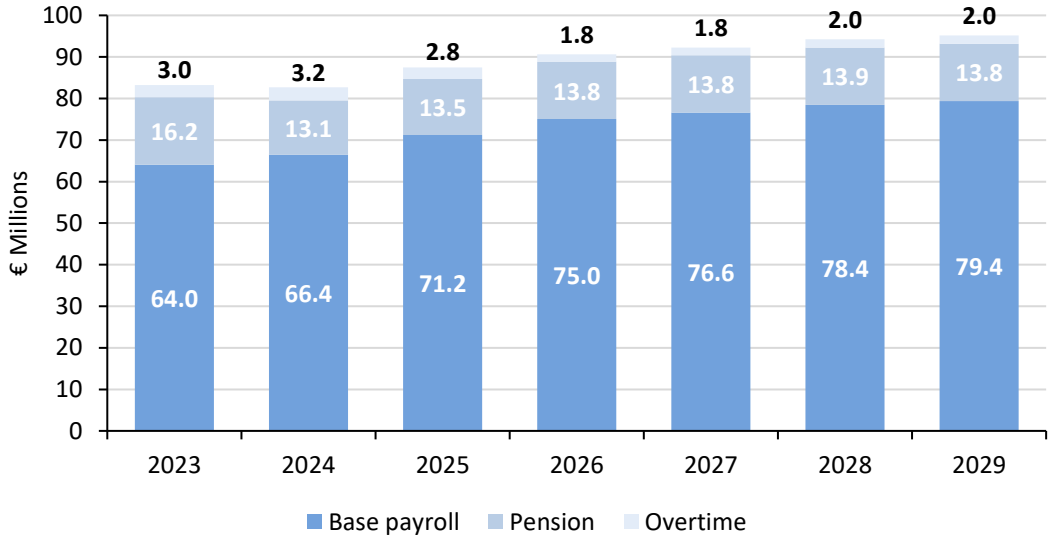
4.24 The efficient base payroll costs are also supplemented by wage growth forecasts over RP4, with some additional adjustment to account for attrition, new hiring, and annual salary increments. CEPA forecasts efficient base payroll costs to increase over RP4 from €71.2 million in 2025 to €79.4 million in 2029 (in real terms), largely due to increases in headcount of ATCOs and engineers.

4.25 To calculate the forecasts for total efficient payroll costs, CEPA estimate forecasts for efficient overtime and pension costs independently of one another. These are then combined with the efficient base payroll costs.

- To estimate an efficient level of overtime, CEPA first forecasts the efficient level of overtime per ATCO, as historically ATCOs have accounted for the majority of overtime hours. For each year of RP4, CEPA calculates an efficient level of overtime per ATCO based on the minimum level of overtime between 2016 and 2023 (excluding 2020 and 2021 which were Covid affected outliers) plus additional overtime required to close the gap between the forecast optimum number of ATCOs and the forecast actual number of ATCOs. The cost of overtime is then calculated by multiplying by the number of ATCOs and by the hourly cost of overtime. To derive total efficient overtime, the ATCO overtime forecasts are adjusted upwards by the historical average proportion of overtime hours not attributable to ATCOs.
- Efficient pension costs, meanwhile, are forecast using actual data provided to CEPA by AirNav Ireland and combined with the base payroll estimates.

4.26 Figure 4.4 below shows the forecast efficient payroll costs broken down by base payroll, overtime, and pension. While base payroll and pension costs are expected to increase, overtime costs should fall to lower levels throughout RP4 as resourcing improves with higher ATCO headcount.

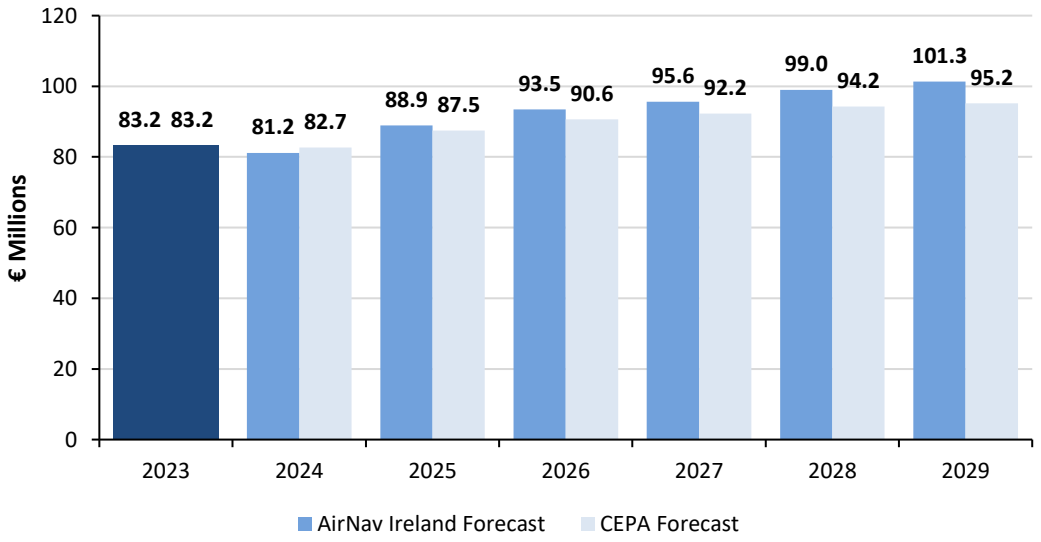
Figure 4.4: Outturn and Forecast Efficient Staff Costs by Component



Source: CEPA, IAA, AirNav Ireland RP4 Business Plan. Real 2022 prices. 2023 actual costs includes the base payroll and associated pension costs of the once-off payment to staff who were the subject of a pay cut in 2020/2021.

4.27 Figure 4.5 then compares the CEPA and AirNav Ireland staff cost forecasts.

Figure 4.5: Comparison of CEPA and AirNav Ireland Staff Cost Forecast



Source: CEPA, IAA, AirNav Ireland RP4 Business Plan. Real 2022 prices. 2023 is an outturn, which includes the one-off payment.

4.28 Similarly, CEPA produces forecasts of efficient costs relating to Other Operating expenditure, which is disaggregated into 24 cost categories. For each category, an efficient baseline expenditure has been estimated for 2023 through benchmarking, expert judgement, and other quantitative methods. These costs are then projected forward through RP4 using volume drivers including traffic, capex, and the forecast staffing levels.

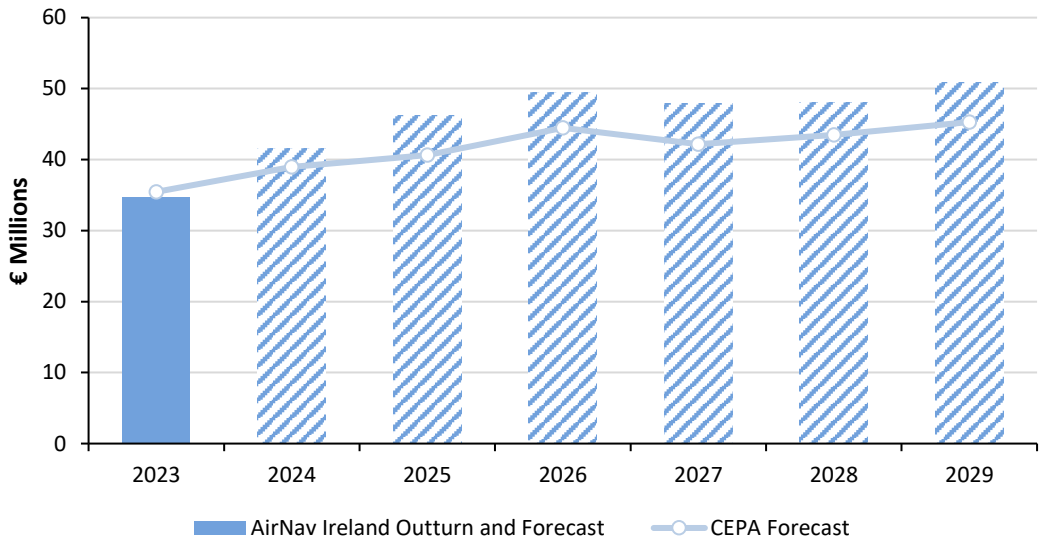
4.29 AirNav Ireland is proposing a considerable increase in spending compared with

current and historic levels. CEPA assesses that while some of these increases are well-evidenced and/or plausible, others are less so:

- CEPA agrees that a step-increase is required for maintenance spending. However, as AirNav Ireland implicitly assumes all maintenance contracts will increase by a minimum of inflation each year, and does not consider whether contracts should be renegotiated to drive efficiencies, the step-change forecast by CEPA is lower than AirNav Ireland's estimate.
- AirNav Ireland is proposing a large step-increase in spending related to computing over RP4. Despite attempting to independently account for the factors that may explain this step increase, CEPA's assessment results in a forecast that is significantly lower than AirNav Ireland's.
- Although AirNav Ireland forecasts an increase in spending on external support (consulting, professional services and PR), it is not apparent, based on the evidence presented, what the need for such an increase is.

4.30 As a result of the above and a number of other cost lines, the forecast efficient Other Operating expenditure is 11% below AirNav Ireland's forecasts over RP4.

Figure 4.6: Comparison of CEPA and AirNav Ireland Other Opex Forecasts



Source: CEPA, IAA, AirNav Ireland RP4 Business Plan. Real 2022 prices.

4.31 Overall, therefore, on average across RP4, our draft Opex forecast for AirNav Ireland is 7% lower than AirNav Ireland's Business Plan submission, as shown in Table 4.2.

Table 4.2: Opex forecasts, Draft Decision and AirNav Ireland RP4 Business Plan, € millions

Cost Category	2025	2026	2027	2028	2029
Draft Decision					
Staff Costs	87.5	90.6	92.2	94.2	95.2
Other Opex	40.7	44.5	42.2	43.5	45.3
Total	**128.1**	**135.1**	**134.4**	**137.7**	**140.5**
AirNav Ireland					
Staff Costs	88.9	93.5	95.6	99.0	101.3
Other Opex	46.2	49.5	48.0	48.1	50.8
Total	**135.2**	**142.9**	**143.6**	**147.1**	**152.1**

Source: CEPA, IAA, AirNav Ireland RP4 Business Plan. Real 2022 prices.

Cost Allocation between En Route and Terminal Charging Zones

4.32 Staff costs have been allocated to En Route or Terminal in a manner consistent with RP3, and with the cost allocation methodology used by AirNav Ireland, as it has described in section 7 of its Business Plan. As we did in 2021, CEPA has reviewed the methodology and also considers it to be reasonable.

4.33 For operational ATCOs, the staffing level has been modelled separately for each location, with AirNav Ireland's allocation keys used to split it into En Route and Terminal. For non-operational ATCOs, the 2024 budget cost-allocation is used. Other staff costs have been allocated based on a mixture of AirNav Ireland's allocation keys and 2023 outturn cost allocation. These allocations are broadly assumed to remain constant throughout RP4. However, in cases where step-changes are expected, as is the case for data assistants, year-on-year adjustments are applied based on location.

Figure 4.3: En Route Apportionments of Eligible Staff Costs

Staff Category	2025	2026	2027	2028	2029
Operational ATCOs	86%	86%	86%	86%	86%
Non-Operational ATCOs	86%	86%	86%	86%	86%
Corporate Services	89%	89%	89%	89%	89%
Data Assistant	84%	84%	84%	84%	84%
Engineer	88%	87%	87%	87%	87%
Operations Management Support	85%	85%	85%	85%	85%

Source: CEPA

Excluding non-eligible apportionments, particularly costs apportioned to North Atlantic Communications oceanic services.

4.34 AirNav Ireland's approach to the allocation of Other Operating costs can be summarised as follows:

- For operational non-staff costs, the costs are initially allocated to an ‘Activity’ and to a ‘Location’. Then AirNav Ireland uses a standardised allocation key to split these costs into En Route and Terminal charging zones, depending on the Activity and Location.
- For more general support costs, these are split into specific subcategories, each of which has a defined allocation key.

4.35 As most Other Operating costs comprise multiple activities and locations, the overall allocation for each non-staff cost category is a weighted average depending on the structure of spend. As such, CEPA use the proportions within AirNav Ireland’s 2024 budget as the basis for the allocation of costs into the En Route and Terminal charging zones, on the grounds that the split of costs by activity and location remain relatively static.

5. AirNav Ireland Cost of Capital

5.1 The cost of capital is the estimate of the return which investors (equity shareholders and holders of debt) in AirNav Ireland would require. It should balance rewarding existing investors appropriately, enabling the delivery of required infrastructure, and protecting the interests of airspace users from excessive charges. For RP4, we propose setting the real cost of capital for AirNav Ireland at 4.26%.

5.2 The formula for the pre-tax weighted average cost of capital (WACC) is expressed as:

$$\text{WACC} = \text{g} \times \text{Rd} + \frac{1}{(1-t)}(\text{Re})(1-\text{g})$$

- Gearing = $g = \frac{Total\ Debt}{Total\ Debt + Total\ Equity}$
- Rd = Pre-tax Cost of Debt
- Re = Post-tax Cost of Equity
- t = Corporate Tax Rate

5.3 In the Issues Paper, we proposed to review recent data on the WACC parameters with a view to updating them relative to our RP3 estimates. The Issues Paper invited comments on whether any changes should be made to the methodology used for RP3, or if other data sources or comparators should be considered when assessing the WACC components for RP4.

5.4 In the responses to the Issues Paper, only AirNav Ireland commented on the proposed approach to the WACC for RP4, stating that the environment is now different to that of 2021 and that this should be taken into account for the RP4 WACC methodology. AirNav Ireland also highlighted the increasing trend of conventional Capex switching to Opex. We note that an example of this trend is IT software investment being replaced with software as a service.

5.5 In its Methodological Review and Update Study on the Cost of Capital[15], dated 25 June, the PRB provides a revised framework for the calculation of the cost of capital for RP4, it outlined 3 options:

- **Option 1 – Efficient WACC** should be used when the WACC of an ANSP is based on a genuine capital structure that is not aligned to the optimal capital structure.
- **Option 2 – Administered WACC** should be used if lower than Option 1 for an ANSP that is subject to a government-specified equity return.
- **Option 3 – Hybrid WACC** should be used if lower than Option 1 for an ANSP that has access to loan finance on favourable terms but is not subject to a government-specified equity return.

5.6 The following subsections set out our estimate of each WACC component. We compare these with the corresponding estimates proposed within AirNav Ireland's RP4 Business Plan and/or within a report from First Economics

[15] Update: Publication of supporting materials for RP4 - European Commission (europa.eu)

commissioned by AirNav Ireland and provided to the IAA. We understand that in its Business Plan, AirNav Ireland generally followed the advice provided to it by First Economics, with the exception of the asset beta component. In that case, First Economics proposed an asset beta of 0.72, but AirNav Ireland proposes 0.6. We proceed on the assumption that the First Economics assessment remains the basis of AirNav Ireland's position on the WACC components, but AirNav Ireland has proposed to lower the asset beta.

Table 5.1: WACC Component Summary Table

Parameter	AirNav Ireland RP4	IAA RP4	IAA RP3
Gearing	0.05	0.5	0.5
Risk-free rate	0.70%	0.73%	(1.2%)
Total market returns	6.50%	6.25%	6.50%
Equity risk premium	5.80%	5.52%	7.80%
Asset beta	0.60	0.55	0.50
Equity beta	0.63	1.03	0.94
Post-tax CoE	4.34%	6.42%	6.00%
Tax rate	12.50%	12.50%	12.50%
Pre-tax CoE	4.96%	7.34%	6.90%
Cost of debt	3.86%	1.17%	0.10%
Pre-tax real WACC	**4.91%**	**4.26%**	**3.50%**

Source: IAA, AirNav Ireland RP4 Business Plan, First Economics report commissioned by AirNav Ireland.

Gearing

5.7 The gearing component reflects the proportion of a company's capital requirements that is financed by debt, as opposed to equity. That is, it determines the weighting assigned to the cost of debt, and the cost of equity, within the WACC formula. It can be estimated based on the actual proportion of debt and equity in the financial structure of the entity, or alternatively, based on a notional structure. A notional capital structure can be seen as an optimal level of gearing, reflecting an efficient allocation of funding as between debt and equity.

5.8 In the RP3 decision, we opted to use a notional capital structure, assigning a gearing ratio of 50%. This estimate was in line with the proposal put forward by AirNav Ireland. At the time, AirNav Ireland justified this proposal on the basis of financial uncertainty as a result of the pandemic, along with recent regulatory precedent for Dublin Airport.[16].

[16] Final Determination 2020-2024 (iaa.ie)
Subsequently, in 2022, we continued the approach of setting a notional gearing of 50%:
iaa.ie/docs/default-source/car-documents/1c-economic-regulation/final-decision-on-the-maximum-levels-of-airport-charges-at-dublin-airport-2023-2026.pdf?sfvrsn=6b8110f3_1

5.9 For RP4, AirNav Ireland has suggested a 5% gearing assumption. AirNav Ireland currently has no debt and does not expect this to change for the foreseeable future. However, based on the uncertain nature of the future, and an assessment that borrowing might ultimately be required to fund operations over RP4, a modest level of gearing has been proposed. Thus, AirNav Ireland is proposing to base the gearing parameter on potential actual gearing, rather than notional gearing.

5.10 The concept of a notional capital structure is rooted in theory and optimises the trade-off arising from increasing debt levels, between greater tax benefits (as cost of debt is tax deductible) and increased risk (for which equity holders must be reimbursed). In the absence of any compelling reason to deviate from the notional 50% gearing estimate for RP3, there is merit in maintaining this level for RP4, to ensure regulatory consistency. The use of a notional capital structure is also supported by continued regulatory precedent, such as our decision in respect of Dublin Airport in 2022, and the UK CAA decisions in respect of NATS (En Route) plc for NR23[17] and Heathrow Airport for H7.[18]

5.11 The approach to and level of gearing proposed by AirNav Ireland in respect of RP4 has not been supported by any compelling rationale to change the approach from RP3. We therefore propose retaining the notional capital structure methodology used for RP3 and retaining 50% gearing.

5.12 The PRB advocates, when taking a Hybrid WACC approach, to calculate the gearing based on the actual capital structure of the ANSP. In maintaining our RP3 approach, our methodology differs. However, as indicated earlier, debt is less expensive than equity, and therefore we justify assuming a notional gearing based on the fact AirNav Ireland currently carries no debt, and a notional gearing better represents more efficient financing.

Cost of Equity

5.13 The cost of equity in this context is a theoretical regulatory construct which can be conceptualised as a profit allowance for the regulated entity. The cost of equity is typically estimated using the Capital Asset Pricing Model (CAPM):

$$\mathrm{Re} = \mathrm{Rf} + \beta_e \times (\mathrm{Rm} - \mathrm{Rf})$$

- Re = Post-Tax Cost of Equity
- Rf = Risk-Free Rate
- β_e = Equity Beta
- Rm = Total Market Return
- $(Rm - Rf)$ = Equity Risk Premium

Risk-Free Rate

5.14 The risk-free rate is the theoretical rate of return on an investment with zero risk. For RP3, we used an approach in line with regulatory precedent and

[17] Economic regulation of NATS (En Route) plc: Provisional Decision for the next price control review ("NR23") (caa.co.uk)
[18] Economic regulation of Heathrow Airport Limited: H7 Final Decision Section 3: Financial issues and implementation (caa.co.uk)

industry standards. We based the estimate on the yield from ten-year Irish and German bonds. Nominal yields over one-year, two-year, and five-year averaging periods were converted into real yields using the Fisher equation.[19] Being backward looking, these rates did not take account of potential changes in yields or rates in future years. These were therefore estimated using the ECB's Euro area yield curve, using both all-Euro-area government bonds and AAA rated government bonds.[20]

5.15 For RP4, AirNav Ireland has proposed a real risk-free rate of 0.7% (2.8% nominal), based on ten-year Irish bond yields during the month of February 2024.

5.16 On the basis that the AirNav Ireland proposal only considers Irish bond yields, the precedent set by the RP3 decision appears more robust. Theoretically, the benchmark security underlying the risk-free rate should have no variance, no liquidity or reinvestment risks, no currency risks, and no risks in connection with inflation. Within the Euro area, German government bonds are often considered to be the least risky assets and trade at high volumes, implying low liquidity risk. Furthermore, as AirNav Ireland is not limited to raising funds in Ireland, the inclusion of German bond yields provides a useful addition in determining the true risk-free rate. This approach is also consistent with our 2022 decision in respect of Dublin Airport.[21]

5.17 AirNav Ireland places weight solely on current data, specifically February 2024. However, relying solely on a single month is a small sample size which may put too much weight on recent market developments and lead to the inclusion of noise and a reduction of predictive power. For RP3, we placed weight on 5-year, 2-year, and 1-year averages, which we have now estimated again as per the below table.

5.18 Nominal bond yields for both Ireland and Germany have increased in recent years as the ECB carried out a cycle of interest rate hikes.[22] Notwithstanding that the cycle has now come to an end, yields remain above the 2021 levels.

Table 5.2: Nominal 10-Year Bond Yields

Country	5-Year Average	2-Year Average	1-Year Average
Ireland	1.30%	2.82%	2.81%
Germany	0.86%	2.37%	2.41%

Source: MarketWatch and IAA Calculations.

5.19 In order to generate the real yields required for the WACC, nominal yields are converted using the Fisher equation and the ECB's survey on the expected long-term inflation rate for the relevant time periods.[23] Despite peaking in the second half of 2022, the long-term expected inflation rate has fallen to 2.0% in

[19] 1+real yield at time t = (1+nominal yield at time t)/(1+long-term expected inflation rate at time t)
[20] Euro area yield curves (europa.eu)
[21] final-decision-on-the-maximum-levels-of-airport-charges-at-dublin-airport-2023-2026.pdf (iaa.ie)
[22] Average of quarterly rates where 5-year average is 2019-2024, 2-year average is 2022-2024, and 1-year average is 2023-2024.
[23] Inflation forecasts (europa.eu)

Q2 2024.

Table 5.3: Real 10-Year Bond Yields

Country	5-Year Average	2-Year Average	1-Year Average	Point-Estimate
Ireland	-0.60%	-0.70%	0.74%	0.07%
Germany	-1.02%	0.27%	0.35%	-0.34%

Source: MarketWatch and IAA Calculations.

5.20 As in RP3, we have also estimated nominal forward rates using the ECB's Euro area yield curve for each year covered by RP4 using both all Euro area government bonds and AAA-rated government bonds. These are converted to real yields using the Fisher Equation and the IMF Euro area inflation forecasts.[24]

Table 5.4: Euro Area Real Yield Curve Spot Rates

Country	2025	2026	2027	2028	2029	Average
All Euro area bonds	1.21%	1.09%	0.98%	0.93%	0.93%	1.03%
AAA-rated Euro area bonds	1.03%	0.82%	0.64%	0.51%	0.46%	0.69%
Average	**1.12%**	**0.96%**	**0.81%**	**0.72%**	**0.70%**	**0.86%**

Source: ECB, IMF, and IAA Calculations.

5.21 Based on the mid-point of historic real yields and average forward rates for RP4, the appropriate range for the risk-free rate is between 0.52% and 0.93%. The 0.7% risk-free rate proposed by AirNav Ireland falls within this range. We propose a point estimate of 0.73%, 3bps above the parameter proposed by AirNav Ireland, and the midpoint of our range estimated above.

Table 5.5: Risk-Free Rate Estimate

	Data Point	Lower Bound	Upper Bound
	Current Yields	-0.34%	0.07%
+	Forward Rates	0.86%	0.86%
=		**0.52%**	**0.93%**

Source: IAA Calculations.

5.22 As for RP3, the PRB methodology to calculate the risk-free rate is different, suggesting that the 10-year average rate from 10-year government bond yields of each respective country only (i.e. in this case Ireland) be used. The PRB accordingly recommend a nominal risk-free rate of 1.5% for Ireland. As outlined above, we deem our approach of also placing weight on the (lower-yielding) German 10-year bond yields to be preferable.

5.23 We also consider that a single 10-year average rate places excessive weight on historic data, and consequently too little weight on more recent data, in particular given the sharp increase in nominal bond yields observed since 2022.

[24] World Economic Outlook, April 2024: Steady but Slow: Resilience amid Divergence (imf.org)

Inflation was close to zero during much of the time period (2014-2024) used by the PRB, whereas the inflation forecasts then used for RP4 are 2% per year. At the other extreme, AirNav Ireland's approach was to use the most recent month only. A number of shorter averaging periods (5-years, 2-years and 1-year) better reflects recent market conditions which are more likely to be observed during the RP4 period, while also providing a larger sample size which places some weight on longer run data.

5.24 Therefore, our proposed approach remains in line with our approach for RP3, which generates a point estimate of 0.73% in real terms, which is similar to AirNav Ireland's proposed parameter. A sensitivity analysis of the impact of using a risk-free rate of either 0.73% or the AirNav Ireland proposal of 0.70% shows that the difference is not material enough to have any impact on the WACC.[25]

Beta

5.25 Within the CAPM formula, the beta coefficient captures the extent of systematic or undiversifiable risk related to holding AirNav Ireland equity. It measures the degree of correlation between (hypothetical) returns of AirNav Ireland equity and returns of a market portfolio. A beta of one means that the entity moves perfectly in line with the market. A beta of less than one means that it is less sensitive to market volatility (i.e. less risky than the market portfolio), and greater than one that it is more sensitive to market volatility.

5.26 There are two variations of beta that can be calculated, the equity (levered) beta or the asset (unlevered) beta. The unlevered beta isolates the risk solely due to an entity's assets and removes the impact of debt, which is then re-levered based on the level of gearing and tax rates to calculate the equity beta within the cost of equity.

5.27 The equity beta is given by the following formula:

$$\beta_e = \beta_a \times \{1+(1 - t) \times (D/E)\}$$

where:

β_e = *equity beta;*

β_a = *asset beta;*

t = corporate tax rate;

D = share of operations financed by debt (equivalent to g in the WACC formula); and

E = share of operations financed by equity (equivalent to (1 – g) in the WACC formula).

5.28 The above equity beta formula assumes that the debt beta is zero, reflecting the position that there is negligible market risk associated with AirNav Ireland debt. This is the approach most often used in estimating the cost of equity within regulatory decisions. While First Economics has included a marginal debt beta

[25] Sensitivity analysis was conducted assuming our proposed Cost of Debt and Equity Risk Premium methodology.

for the calculation of the cost of equity, we suggest that there is no reason to deviate from the regulatory precedent set in RP3.

5.29 There is no direct way to calculate AirNav Ireland's asset beta, as its equity is not traded. Thus, in line with the methodology we used for RP3, we have conducted a review of asset betas estimated in respect of several comparable European ANSPs and airports, entities facing similar operating challenges in the same overall market and/or under the same European rules and regulations. While other ANSPs regulated under the same regime as AirNav Ireland are natural comparators, the betas of the selected airports are also suitable as they experience similar levels of sector-specific demand and revenue risks to ANSPs and are mostly regulated under some form of price-cap/economic regulation.

Table 5.6: European Aviation Infrastructure Sector Asset Betas

Estimate Type	Name	Entity Type	Decision Year	Lower Bound	Upper Bound	Point-Estimate
Based on market data	ADP	Airport, France	2023	0.54	0.56	0.55
	Fraport	Airport, Germany	2023	0.49	0.54	0.52
	AENA	Airport(s), Spain	2023	0.56	0.69	0.63
	ENAV	ANSP, Italy	2023	0.62	0.76	0.69
Regulatory decision	Heathrow	Airport, UK	2023	0.44	0.62	0.53
	Dublin Airport	Airport, Ireland	2022	0.59	0.61	0.60
	NERL	ANSP, UK	2023	0.52	0.70	0.61

Source: UK CAA, IAA. Note: All market-based estimates are based on data within the Flint NR23 Updated Beta Assessment support to the CAA in respect of NR23. The data analysed included 5-years of pre-covid data for the period from Feb 2015 to Jan 2020 (3.5-years for ENAV, from Jul 2016 to Jan 2020) and 1.2 years of post-covid data for the period Jan 2022 to Mar 2023.

5.30 First Economics conducted a similar analysis, although with a more varied comparator group, including telecom companies and electricity, gas and water network utilities. Although these are indeed regulated entities, the regulatory regimes and overall risk environments differ to those of AirNav Ireland. We therefore assess the comparator group outlined in the above table to be more representative of the regime and environment within which AirNav Ireland operates.

5.31 While the Covid-19 pandemic had considerable impacts on ANSPs and airports, in the RP3 decision in 2021, we noted that this does not necessarily mean that ANSPs are any more sensitive to systematic risk than pre-pandemic. It was not yet clear whether the pandemic had changed airport/ANSP relative exposure to systematic risk, particularly over the longer term. This was consistent with the view of AirNav Ireland/First Economics in 2021, who recommended an unchanged asset beta from 2019.

5.32 Further evidence on this point has since come to light. Various regulators, the

IAA included, have assessed the impact of the pandemic on asset betas in recent decisions. For the decision on airport charges at Dublin Airport in 2022, using empirical, market-based data for exchange-listed airports, we found a large but short-term spike in asset betas at the beginning of the pandemic (March 2020). Asset betas continued to revert in the second half of 2021, tending back towards pre-pandemic levels.[26] Airport stocks did not react nearly as extremely to later waves of pandemic variants when compared to the initial outbreak, as investors recognised the resilience of major airports and ANSPs, and the cushioning impact of government and regulatory intervention. This suggested that such stocks would not react in the same way if another significant downside events were to unfold in the upcoming regulatory period.

5.33 On that basis, in estimating an asset beta for Dublin Airport, only non-pandemic market data of comparator airports was used, with all of 2020 removed from the sample. This approach removed the considerable, but temporary, spike in asset betas observed in the initial stages of the pandemic so as not to place excessive weight on observations impacted by the pandemic. Based on 1-year, 2-year, and 5-year averages, this provided a narrow asset beta range of between 0.59 and 0.61, with a point estimate based on the mid-point of 0.60. This represented an increase of 0.10 on the pre-pandemic asset beta from the original 2019 Determination.[27] Subsequent to our decision of December 2022, the empirical beta observations within the comparator sample we used continued to trend downwards.

5.34 Flint[28], on behalf of the UK CAA, estimated a Covid-19 related asset beta adjustment range of 0.02 to 0.08 for NERL, based on an assessment of ADP, Fraport, and AENA. When combined with the baseline beta range of 0.50 to 0.62, this implied a Covid-19-adjusted beta range of 0.52 to 0.70 for NERL. An assessment of ENAV's asset beta under the same conditions was deemed less statistically reliable than the airport comparators, and therefore afforded less weight, but nonetheless found only a slight Covid-19 impact on the asset beta.

5.35 A similar approach was followed by the UK CAA in respect of Heathrow Airport for H7, whereby an assumption was made that the pre-pandemic beta was in line with the previous determination (0.50), and this was then adjusted upward to reflect the unmitigated impact of the pandemic, before being reduced to reflect the impact of the newly introduced TRS mechanism. The impact of the pandemic was estimated as ranging from 0.01 to 0.11.

5.36 Based on its assessment of risk exposure and comparator analysis, First Economics proposed an RP4 asset beta of 0.61 for terminal services and 0.80 for En Route, settling on a point estimate of 0.72 for both combined. While the lower bound of this estimate was within the range of comparators assessed, the 0.80 estimate was beyond the upper bound. First Economics justified this on the basis of the small operational gearing of the En Route cost base, and the significant risk posed by both revenue and cost shocks to profit levels, given the small asset base. As noted above, AirNav Ireland then proposed an

[26] Microsoft Word - Cost of Capital 2022 Final Version - Redacted.docx (iaa.ie)
[27] Final Determination 2020-2024 (iaa.ie)
[28] NR23 Updated Beta Assessment (caa.co.uk)

estimate of 0.6 instead, which is below the lower bound of the First Economics range.

5.37 While we agree that the regulated business is subject to some volume risk, we disagree that this is considerable as described by First Economics. The 2019 Regulation provides for a traffic risk sharing mechanism which protects ANSPs in the case of significant deviations in service units relative to the forecast, with the full additional cost/revenue being borne by the ANSP if service units deviate by no more than 2% of the performance plan, 70% of additional cost/revenue being borne by the ANSP if service units deviate by greater than 2% but less than 10%, and all additional costs/revenues being borne by airspace users if service units deviate by more than 10%.

5.38 The First Economics analysis centres on the relative scale of the RAB to revenues, and the consequent profit margin which is generated by the regulatory framework. It highlights AirNav Ireland's small En Route RAB, and states that profit in the En Route business is therefore much more volatile in the face of volume shocks than comparators such as Dublin Airport, Heathrow Airport, and NERL.

5.39 However, while we agree that, all else equal, a larger RAB provides for a larger buffer against downside shocks, such a feature should not be viewed in isolation of all of the other factors which influence the volatility of profit, in the manner done by First Economics. Nor should the Terminal and En route markets be considered in isolation of each other when setting an asset beta for the full regulated business. In practice, contrary to the First Economics supposition, AirNav Ireland's profits have been less volatile during the Covid-19 pandemic than, for example, Dublin Airport. AirNav Ireland made a modest profit in 2020 during the height of the pandemic and a significant profit in 2021, primarily linked to:

- The extensive traffic and cost protection provided by the SES regulations, which were accrued in respect of those years.
- The ability of AirNav Ireland to respond to unfolding circumstances by scaling its costs to a certain extent.
- More diversification with respect to traffic shocks. The Terminal customers are broadly similar to Dublin Airport and thus also related to demand for air transport in Ireland. However, the En Route business is primarily composed of transatlantic overflights to/from the UK/mainland Europe and therefore less dependent on and sensitive to prevailing macroeconomic conditions in Ireland.
- The volume risk for airport operators being defined in passenger volumes, which are more volatile than ANSP service units, as they also depend on aircraft load factors, unlike service units.

5.40 The demonstrated result of the above, combined with the relatively small asset base, is that AirNav Ireland's profit margins are lower but more stable than the comparators referenced.

5.41 Separately, we note that the PRB, using ten-year average asset betas of two peer groups selected based on their similarity in activities, risk profile and sector compared to ANSPs, estimates a range for the asset beta of European ANSPs of 0.52 to 0.59.

5.42 The estimate of the asset beta should be forward looking and take account of developments since estimates were last made. While the pandemic had a considerable impact on the aviation industry, as discussed, asset betas have not largely seen a level shift, but more so a slight uplift. Based on this, we do not see that there is any fundamental change relative to our 2021 assessment. However, we recognise that estimates for the comparator group have risen somewhat since the pandemic, although now to a lesser extent than our estimated increase of 0.10 in 2022 in relation to Dublin Airport.

5.43 Based on all of the above, we propose to increase the asset beta range from 2021 by 0.05, giving a range of 0.50 to 0.60, with a point estimate of 0.55. This figure is close to, but slightly lower than, the point estimate proposed by AirNav Ireland, in line with the above regulatory estimates of the impact of Covid-19 on asset betas, and in the middle of the range recommended by the PRB.

5.44 The asset beta of 0.55, with our proposed gearing level, corresponds to an equity beta of 1.03.

Equity Risk Premium

5.45 The equity risk premium (ERP) is the excess return earned by investors above the risk-free rate. It can either be estimated in isolation, or by estimating total market returns (TMR) and subtracting the risk-free rate. The TMR is the sum of the risk-free rate and the ERP, with the ERP then being the difference between the risk-free rate and the TMR. Irish regulatory precedent has typically looked at the ERP as an isolated and stable component of financial markets. Typically, the ERP is estimated based on a long-run average of the difference between market returns and government bond yields, the underlying assumption being that a long-run average adequately reflects future values of the ERP.

5.46 However, evidence suggests that the ERP is counter-cyclical.[29] Therefore, during a relatively short regulatory period of between 4 to 5 years, deviations from the long-term average of the ERP may have a substantial impact on the estimated WACC and should be investigated carefully. The TMR is generally considered to be more stable over time compared to its individual components, and therefore potentially better suited for estimating the ERP.

5.47 In assessing the ERP in isolation, many regulators take note of the latest Dimson Marsh Staunton (DMS) estimate, which uses a long-run average. This is contained within the UBS (formerly Credit Suisse) Global Investment Returns Yearbook and published annually. As discussed above, the estimated ERP and RFR are then combined to calculate the TMR. In comparison, the PRB advocates the use of the dataset of Damodaran[30], applying just the German

[29] Credit Suisse Global Investment Returns Yearbook 2018 (credit-suisse.com)
[30] Damodaran On-line Home Page (nyu.edu)

ERP Union-wide.

5.48 Others base the assessment on a mix of the DMS estimate, adjusted using Blume's method[31], and a forward-looking estimate using a Dividend Discount Model, as was the case for our recent decision on airport charges at Dublin Airport in 2022. Recent regulatory assumptions on the TMR are presented in Table 5.7.

Table 5.7: TMR Assumptions in Recent Regulatory Decisions

Decision	Year	Low	High
CRU – Irish Water	2019	6.30%	6.75%
Comreg – Telecoms	2020	6.65%	6.65%
CRU – ESB & Eirgrid	2020	5.70%	6.75%
IAA – AirNav Ireland	2021	6.00%	7.00%
IAA – Dublin Airport	2022	5.70%	6.81%
CAA – Heathrow Airport	2023	5.20%	6.50%
CAA – NERL	2023	5.20%	6.50%
Average		**5.82%**	**6.71%**

Source: CRU 2019, Comreg 2020, CRU 2020, IAA 2021, IAA 2022, CAA 2023, IAA Calculations.

5.49 Recent regulatory decisions have broadly demonstrated the TMR to be relatively stable over time. We note that taking an average of all comparators in the above table, applying equal weight to each, provides for a TMR within the range of 5.82% to 6.71%, with a midpoint estimate of 6.27%.

5.50 This midpoint of 6.27% remains closely in line with the estimate for the most recent Dublin Airport charges decision, which found a backward-looking TMR range of between 5.97% and 6.81% and a forward-looking TMR range of between 5.70% and 6.81%. The point estimate we used was 6.25%.

5.51 This estimate is slightly below the 6.50% proposed by AirNav Ireland in the RP4 Business Plan, which was based on an assessment of recent regulatory decisions and precedent. The PRB, in assessing the ERP in isolation using German figure from the dataset of Damodaran, suggest an ERP of 5.3%. When combined with our proposed risk-free rate of 0.73%, this leads to a TMR component of 6.03%; thus slightly further below our estimate. Overall, we consider that there is no reason to deviate from our 2022 estimate and propose a TMR for RP4 of 6.25%. Given our proposed risk-free-rate, this equates to an ERP of 5.52%.

Cost of Debt

5.52 When estimating the cost of debt, our preferred approach is to use an estimate of embedded debt, based on the costs of currently held debt, combined with the forecast cost of any new debt, which can be estimated based on

[31] Blume's method gives a weighted estimate of the arithmetic and geometric mean returns.

comparable companies operating under similar market conditions. AirNav Ireland currently has no embedded debt, which implies a weighting of 100% on new debt. Conversely, in respect of NERL for NR23, the UK CAA placed a 100% weighting on embedded debt since NERL had no further intentions of borrowing but did have existing debt.[32]

5.53 Irish regulators have traditionally chosen a debt premium approach to determine the cost of debt.[33] Rather than estimating the cost of debt directly, this approach estimates the spread relative to the risk-free rate which creditors expect for lending to the regulated entity. The sum of the risk-free rate and the debt premium represents the total cost of debt. This is the approach which we took when calculating the cost of debt for Dublin Airport in 2022.

5.54 However, although AirNav Ireland currently does not hold any debt, it does have in place undrawn Revolving Credit Facilities (RCFs) and has included the agreed terms in its RP4 Business Plan. AirNav Ireland has not expressed an intention to borrow over RP4; however, the arrangements of the RCFs provide an estimate of the cost of debt which would be faced if borrowing was required. In addition, although the PRB advocates for the debt premium approach to calculate the cost of debt component, it suggests that if an ANSP has access to favourable loan finance, this should be used instead of the debt premium approach.

5.55 First Economics, on behalf of AirNav Ireland, also take this approach, in line with their proposal within the RP3 Business Plan[34], however, use the 5% gearing ratio discussed earlier. First Economics then forecasts the costs it would face if it were to borrow €10m (arrangement fees, interest, commitment fees, and the option to extend). This leads to a proposed nominal cost of debt of 5.94%, which corresponds to a real cost of debt of 3.78%.

5.56 As discussed under the Gearing subsection, we instead propose to retain the 50% assumption. We calculate a nominal cost of debt of 3.79%, when the gearing is amended relative to the First Economics approach. Nominal debt costs have been converted to real debt costs using the Fisher equation and the RP4 average inflation rate based on the April 2024 IMF forecast for 2025-2029 for Ireland[35]. This leads to a real cost of debt of 2.02%.

5.57 Furthermore, the cost of debt associated with the RCFs is heavily dependent on the EURIBOR rate. The expectation for 2025 and 2026 is for the 3-month rate to average 2.8% and 2.5% respectively. This reflects a downward trend from the current rate, but a much higher rate than was observed over 2014 to 2022. However, forecasts are only available for the first 2 years of RP4, and with the ECB expected to reduce interest rates over the coming months and years, calculating the cost of debt associated with the RCFs based solely on forecasts for the first 2 years of RP4 seems unreasonable and places excessive weight on the short-term position, in the context of a regulatory period which

[32] https://www.caa.co.uk/publication/download/20739
[33] Dublin Airport Cost of Capital for 2019 Determination (iaa.ie)
[34] 20210715-iaa-ansp-rp3-plan-(non-confidential)(1).pdf
[35] World Economic Outlook, April 2024: Steady but Slow: Resilience amid Divergence (imf.org)

will last until 2029. Furthermore, we note that Article 28 of the 2019 Regulation provides a mechanism for unit rate adjustment in year n+2 or the following reference period if there is an unforeseen increase in the cost of borrowing, provided that changes in these costs are outside of the control of the ANSP.

5.58 Based on the above, to take account of the longer run data, we also calculate the cost of debt based on a 5-year historic average of the 3-month EURIBOR rate[36] to June 2024. This yields a real cost of debt, holding all other terms of the RCFs constant, of 0.32%. Similar to other parameters, we consider it appropriate to place weight on the near term forecast as per the First Economics approach, but also on the longer run average. This results in a real cost of debt in the range of 0.32% to 2.02%. We propose a point estimate of 1.17% which is the mid-point of this range.

WACC Summary

5.59 The range of values for the WACC, calculated based on the parameters above, is shown in the table below compared against the values estimated by AirNav Ireland.

Table 5.8: AirNav Ireland and IAA WACC Comparison

Parameters	AirNav Ireland RP4 BP	IAA Estimate		
	Point Estimate	Low	High	Point Estimate
Gearing	0.05	0.5	0.5	0.5
Risk-free rate	0.7%	0.52%	0.93%	0.73%
Total market returns	6.5%	5.82%	6.71%	6.25%
Equity risk premium	5.8%	5.30%	5.77%	5.52%
Asset beta	0.60	0.50	0.60	0.55
Equity beta	0.63	0.94	1.13	1.03
Post-tax CoE	4.34%	5.49%	7.43%	6.42%
Tax rate	12.5%	12.5%	12.5%	12.5%
Pre-tax CoE	7.34%	6.27%	8.49%	7.34%
Cost of debt	3.86%	0.32%	2.02%	1.17%
Pre-tax real WACC	**4.91%**	**3.30%**	**5.26%**	**4.26%**

Source: IAA Calculations, AirNav Ireland RP4 Business Plan.

5.60 The nominal WACC in each year of RP4 is shown in the table below. The point estimate of the real WACC from the table above has been converted to a nominal WACC using the Fisher equation and the inflation rate for each year of RP4.

[36] FM.M.U2.EUR.RT.MM.EURIBOR3MD_.HSTA | ECB Data Portal (europa.eu)

Table 5.9: Nominal WACC

	2025	2026	2027	2028	2029
Inflation	2.01%	1.95%	1.96%	1.98%	2.0%
Nominal WACC	6.35%	6.30%	6.31%	6.33%	6.35%

Source: IAA Calculations

5.61 AirNav Ireland has kept its asset register at historical cost (i.e. in nominal prices). Consequently, the RAB we have derived from the asset register is nominal, and thus a nominal WACC must be applied to derive the return on capital.

6. AirNav Ireland Capital Costs and Investments

6.1 This section sets out our proposed AirNav Ireland capital cost allowances for RP4, summarised in Table 6.1. There are two elements of Capital Costs:

- Depreciation, based on the value of the asset over its expected useful life, which must be calculated on a straight-line basis under the 2019 Regulation.
- A return on capital, derived from the application of the WACC set out in Section 5 to the Regulated Asset Base (RAB).

Table 6.1: Proposed Capital Costs for RP4, € million

Source	Zone	2023A	2024B	2025	2026	2027	2028	2029
IAA Draft Decision	En Route	8.5	8.7	11.7	14.2	17.6	18.6	20.9
	Terminal	7.4	7.7	9.5	10.3	11.7	12.2	13.7
	Total	**16.0**	**16.3**	**21.3**	**24.4**	**29.3**	**30.8**	**34.5**
AirNav Ireland	En Route	8.5	9.6	12.3	15.6	20.1	21.8	24.8
	Terminal	7.4	7.7	9.8	10.9	12.8	13.7	15.7
	Total	**16.0**	**17.3**	**22.1**	**26.5**	**33.0**	**35.6**	**40.5**

Source: IAA Calculations, AirNav Ireland. Nominal prices.

6.2 The published model shows the build-up of these cost estimates from the individual asset lines, as allocated to the appropriate location and charging zone. In re-estimating the AirNav Ireland capital cost proposals from its asset register, we obtained a close match with the figures presented in its Business Plan. Over the RP4 period, we estimated En Route depreciation as slightly higher (€40k) than AirNav Ireland in 2029 only, which we will further review ahead of the Final Decision. We estimated the cost of capital as slightly lower than AirNav Ireland (c€20k per year), which we believe may relate to the application of the Fisher equation to convert the WACC from real to nominal terms.

6.3 The differences in Table 6.1 are therefore primarily driven by our proposals to make some adjustments to the proposed asset lives and the estimate of likely expenditure on new investments, as well as, in the case of the cost of capital, to set a lower WACC than proposed by AirNav Ireland. These adjustments are explained below. We then set out proposals in relation to the regulatory treatment and reporting for new RP4 projects. A project-by-project overview of proposed RP4 projects is contained in Appendix 1.

6.4 The RAB is in nominal prices. All figures presented in this section are in nominal prices, with a nominal WACC applied as set out in Section 5.

Issues paper and Responses

6.5 In the Issues Paper, we proposed to maintain a biannual approach to capex reporting in RP4. We also suggested reporting on the expected delivery of

Common Project 1 (CP1) functionalities relative to their required timelines, so that this is embedded and tracked within the general monitoring of Capex delivery.

6.6 In relation to the assessment of AirNav Ireland's capital programme, we proposed to review the investment programme, both at a project level and in totality, for achievability, efficiency, and need. We said that we would consider the proposed asset lives put forward by AirNav Ireland for reasonability, relative to our benchmarks, and ensure that there is no double counting of project remuneration from RP2 or RP3.

6.7 We sought the input of stakeholders on whether the current reporting framework remains appropriate, whether a better method of assessment could be considered and how deliverability should be measured.

6.8 AirNav Ireland requests us to fully consider its history when it comes to Capex delivery and the steps it is taking to improve the delivery of future programmes (e.g. new project management structures, and engineer recruitment). AirNav Ireland also requests that the IAA examine how it benchmarks against the relevant jurisdictions when it comes to ratios of, for example, engineers to ATCOs. In response to the Capex reporting, AirNav Ireland noted that CP1 is currently monitored by the SESAR Deployment Manager on behalf of the European Commission and locally by the IAA under a separate regulatory process.

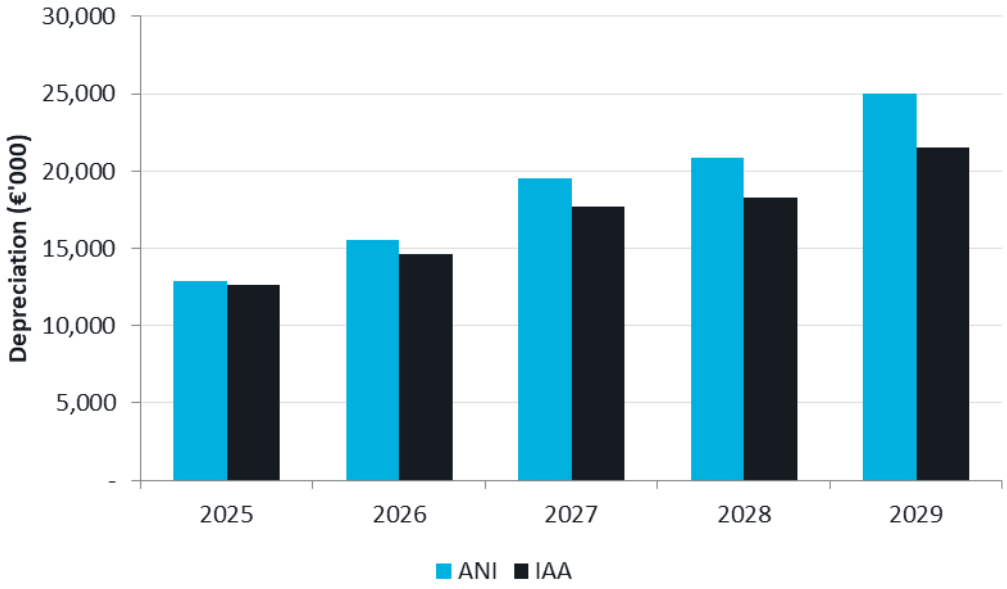
6.9 Aer Lingus and Ryanair both commented on AirNav Ireland's under delivery of the RP3 capex programme. Ryanair also remarked that it was in favour of continuous monitoring and reporting on capex delivery and suggested a thorough cost-benefits analysis for the RP4 plan.

Capital Costs

Modelling depreciation and Return on Capital

6.10 In Figure 6.1 below, we present our proposed level of depreciation inputs over RP4 relative to the amounts proposed by AirNav Ireland. Overall, we estimate a 9.7% reduction in total depreciation costs over the period compared to AirNav Ireland's proposal.

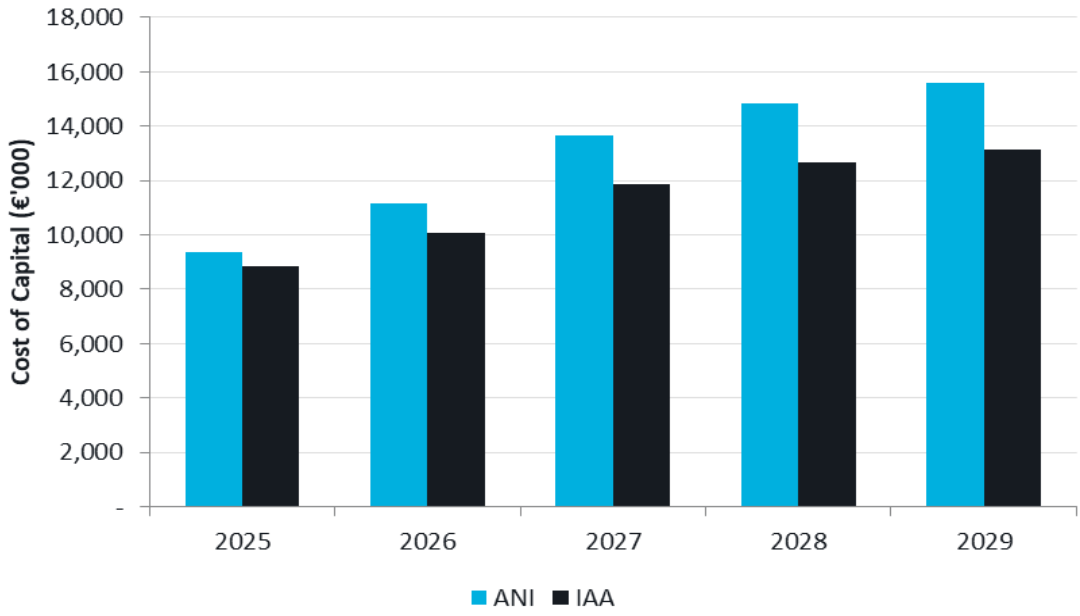
Figure 6.1: Proposed Depreciation over RP4 Compared to AirNav Ireland



Source: AirNav Ireland, IAA Calculations

6.11 In Figure 6.2 below we present our estimate of AirNav Ireland's return on capital over RP4, relative to AirNav Ireland. The nominal WACC in each year is applied to the weighted average net book value (NBV) of fixed assets (where the weighting applies to when new assets are capitalised in the year) and, in the case of all projects other than TopSky ATC One, added to accrued capitalised interest which is depreciated alongside the fixed asset.

Figure 6.2: Proposed Return on Capital Compared to AirNav Ireland



Source: IAA Calculations

6.12 Overall, we estimate the return on capital as 12.5% lower than AirNav Ireland.

6.13 Article 4(d)(i) of the 2019 Regulation allows for charges to be calculated on the basis of 'the sum of the average net book value of fixed assets in operation or under construction.' In 2021, we identified that a feature of AirNav Ireland's recovery of capital costs is that it has only charged capital costs in relation to capitalised assets in operation. Thus, rather than charge a return on capital for assets which are under construction, this foregone revenue is instead capitalised and then depreciated alongside the value of the asset. This necessitates the calculation of a notional asset base, composed of both the value of the project and the value of the foregone interest during construction, to which the WACC is applied.

6.14 We accepted this approach for RP3, noting that the wording of the 2019 Regulation does not preclude it and, in the context of the 'User Pays' principle, there is an argument for delaying the remuneration of interest during construction such that it aligns with the useful life of the project.

6.15 For RP4, AirNav Ireland proposes to take the same approach with the exception of the TopSky ATC One project. In that case, it proposes to include a return on capital during construction, with the overall return averaging approximately €1m per year over RP4. As noted below in Section 12, AirNav Ireland should be able to comfortably fund the capital investment programme on cash flow within RP4 alone, without raising any debt. This approach is not necessary on the grounds of financeability. However, the proposed approach is also consistent with the referenced article of the 2019 Regulation, which expressly allows for pre-funding.[37]

6.16 We have thus applied the approaches as proposed by AirNav Ireland in our modelling of the return on capital.

Cost Allocation

6.17 We reviewed the cost allocation methodology through which the capital costs are assigned to the En Route, Terminal, and other cost bases. Costs are first allocated to geographical cost centres, such Shannon ACC (Ballycasey), Dublin Airport, Cork Airport, Shannon Airport, North Atlantic Communications (Ballygireen), and Headquarters (D'Olier Street).

6.18 Where a project is solely associated with the provision of En Route services, such as at Ballycasey, it is allocated 100% to the En Route cost base. If solely associated with the provision of Terminal services, it is allocated 100% to the Terminal cost base. If the project is to be used for the provision of both En Route and Terminal services at a given location, it is jointly allocated.

6.19 The apportionment of jointly allocated projects depends on the location. At Dublin and Shannon ACC, costs are allocated 75:25 to En Route, while at Cork the apportionment is 50:50. The assets for the headquarters are assigned 73%

[37] In other circumstances, where the relevant legislation does not expressly allow for or not allow for pre-funding of capital costs, the IAA typically considers it on a case-by-case basis with reference to financeability.

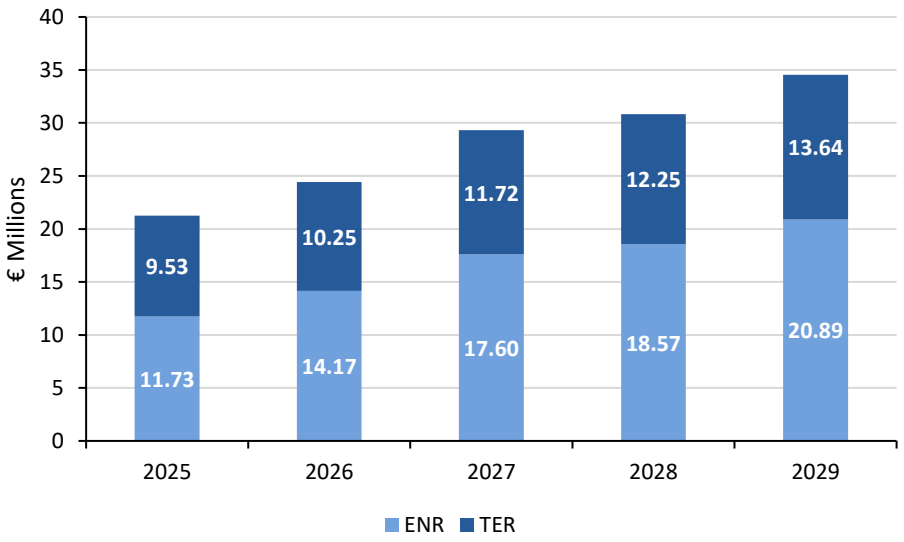
to the En Route cost base. These allocation keys reflect the extent to which each location provides services to Terminal/En Route traffic, having regard to the 20km rule and the mix of ACC, Approach, and Tower services provided by each ATC unit. We note that this allocation approach aligns with paragraph 2.5.4 of the CRCO guidance material on principles for establishing the cost base for En Route charges.[38]

6.20 Certain RP4 projects, such as Flood Mitigation Works and the Climate Action Plan/Lift upgrade, Radiator & Pipe Infrastructure and Low energy lighting, include elements of works at the Ballygireen centre which is out of scope of the performance plan. We have verified that these direct costs have not been apportioned to either the Terminal or En Route cost bases.

6.21 This methodology is therefore unchanged from RP3. Similar to Opex, we conclude that AirNav Ireland's allocation methodology for capital costs is reasonable and pragmatic, and we do not propose to change it as part of the RP4 Performance Plan. The allocation of each RP4 project, as assigned to the relevant cost centre(s), can be observed in the model.

6.22 Figure 6.3 below presents our proposed capital costs by charging zone for RP4.

Figure 6.3: Proposed En Route and Terminal capital costs for RP4



Source: IAA calculations

New RP4 Investments

6.23 AirNav Ireland's RP4 Business Plan includes a substantial capital investment programme. The standout feature is the planned replacement of the ATM system with the TopSky ATC One Platform Upgrade which will be procured through the COOPANs alliance. In addition to investment in a new ATM system, AirNav Ireland proposes to deliver the new Contingency Air Situation Display System which would be used in the event of a COOPANS failure, as well as a

[38] https://www.eurocontrol.int/sites/default/files/2019-12/doc-20.60.01-eurocontrol-principles-january-2020-en.pdf

number of other major projects and a range of smaller projects.

6.24 AirNav Ireland has split the capital programme into three categories:

- Property, Security and Sustainability Projects (Appendix 1). The types of works envisioned in these projects are structural refurbishments and alterations, extensions to current buildings and climate action plan projects which will focus on delivering more energy efficient solutions.
- ICT projects (Appendix 2). These projects include cybersecurity and life-cycle replacement for PCs, laptops, ICT servers, and printers.
- Technology and Operations (Appendix 3). The projects in this appendix cover a range of functions including communications and navigation, surveillance and flight data processing systems (including the TopSky ATC Platform Upgrade).

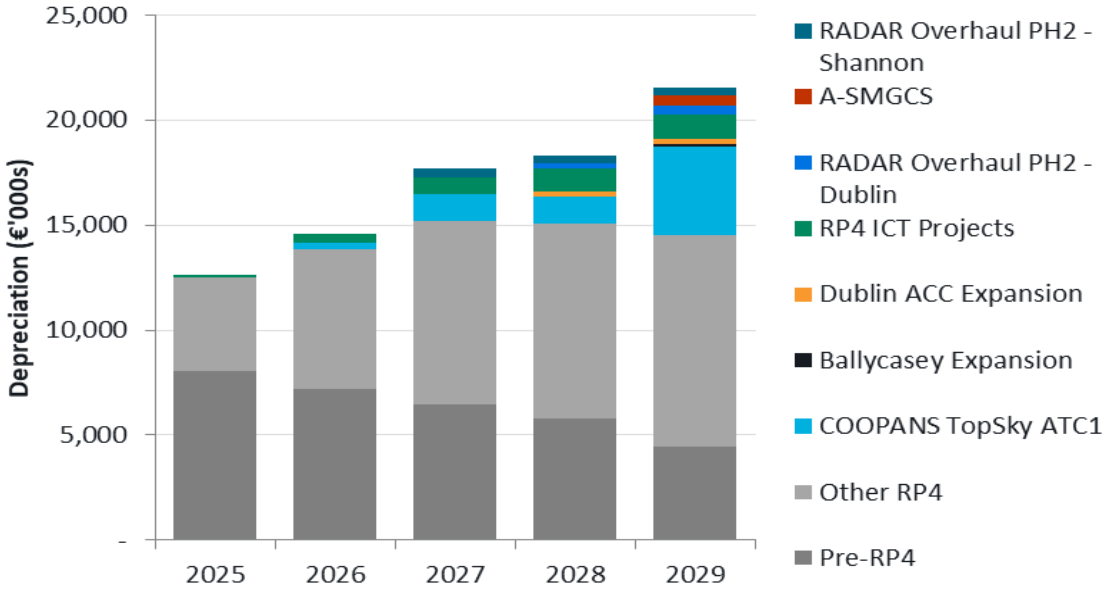
6.25 The project appendices are published as part of AirNav Ireland's business plan submission. As part of our assessment of the capex programme, we asked AirNav Ireland a series of questions and in some cases issued requests for further information, predominantly to ensure that we understood and could report on:

- The need for, or benefits of, a particular project.
- How the cost proposal has been derived (together with evidence supporting same where available).
- The basis of estimation of asset lives.

6.26 A number of answers to these questions remain outstanding or were not received in time to take into account for the Draft Decision. These will be closed out and taken into account as part of the Final Decision, together with the consultation response submissions.

6.27 The chart below illustrates our proposed depreciation costs by project or project group. Most notable is the share of TopSky ATC One in the second half of the reference period. There is also a significant number of projects which began in previous reference periods which will continue to depreciate throughout RP4.

Figure 6.4: Proposed Depreciation Costs by Major Project



Source: IAA Calculations

Merit and Deliverability of the Investment Programme

6.28 In considering the overall deliverability of the investment programme, we note that AirNav Ireland significantly underdelivered in RP3. Table 6.2 compares the actual level of capital costs over RP3 relative to the determined costs for AirNav Ireland. [39] AirNav Ireland has now estimated that it will not incur €16.4m of capital costs by the end of RP3, which amounts to 21% of the forecast costs in the period. We note that this follows on from a significant underspend in RP2 as well.

Table 6.2: Total RP3 Determined and Actual Capital Costs, €m

	Actual	Determined
ENR	44.2	51.9
TER	29.2	35.7
Total	**73.4**	**87.6**

Source: RP3 Reporting tables, IAA calculations

6.29 Further to the table above, in its RP4 Business Plan, AirNav Ireland forecasts that by the end of RP3 it will have underspent its capital expenditure allowance by 23%. AirNav Ireland attributes the underspend to a range of factors: prioritising service delivery and the delivery of major capital projects, difficulty in the recruitment and retention of engineers in the first half of RP3, and the focus on the regulatory restructuring process.

6.30 The proposed capital investment plan submitted by AirNav Ireland would see total capitalisation of over €200m over RP4. For RP3, AirNav Ireland forecast €160m of capitalisations. This was reduced at programme level to €140m by

[39] Actuals contains 2024 forecast.

the IAA, primarily on the ground that we considered it unlikely that AirNav Ireland would deliver the full programme. We did this by applying a 20% programme level reduction to projects not already delivered but excluding two major projects, the Contingency En Route Centre, and the new control tower at Dublin Airport. As AirNav Ireland now notes, it has significantly underdelivered even relative to the smaller programme assumed by the IAA for the RP3 Determined Costs.

6.31 Whereas AirNav Ireland forecasts higher capitalisations over RP4 relative to its forecast for RP3, its forecast of capital expenditure of approximately €90m is similar to its RP3 forecast. AirNav Ireland says that it has been successful in recruiting engineers in the latter years of RP3 and is confident that, with sufficient resources, it will be able to deliver the proposed RP4 capital programme.

6.32 As set out in Appendix 1, we generally accept the merits of progressing the intended projects during RP4. Several of these projects have been delayed from previous reference periods and are now planned for RP4. We note that in RP3, the projects linked to Navigation and Property & Security suffered the most from the under delivery, with 73% and 42% respectively underspent. It is therefore not surprising that AirNav Ireland plans to invest substantially in property projects for RP4. We have received material from AirNav Ireland relating to the conditions of some of the buildings it plans to repair/renovate during RP4, which would suggest the work is overdue.

6.33 As noted in Section 4, our forecast assumes a material increase in staffing levels in respect of both engineers and ATCOs, which, if reflected by AirNav Ireland, should allow it to be more effective in delivering investment while maintaining service levels. However, even with the additional staff numbers and the restructuring of AirNav Ireland's project management approach, we see the proposed scale of the investment programme as a significant challenge to AirNav Ireland. While we recognise that many of the projects presented are needed to meet regulatory obligations such as CP1 deadlines and others are required due to existing supplier support being no longer available, we are, again, not convinced that the overall programme is likely to be delivered to the proposed timescales, meaning that the capital cost forecasts estimated on the basis of delivery to those timescales may be too high.

Cost Estimates

6.34 The level of cost information submitted to the IAA varied by project. For the majority of the property and sustainability projects, AirNav Ireland provided us with at least high-level cost breakdowns. Some projects, such as the extension to the Cork ATC building, are being carried over from RP3 but at a higher proposed cost than in RP3. In these scenarios AirNav Ireland has provided explanations for the increased costs, which we have or are in the process of verifying.

6.35 It is clear that some of the projects proposed are at an early stage of design, which is reflected in the level of cost material supplied. For example, while AirNav Ireland has submitted an internal business case with detailed costs for

the energy efficient lighting aspect of the climate action plan, no such information has been submitted for the pipe and radiator infrastructure upgrades or the lift upgrades which are planned for implementation by 2026 and 2028 respectively. In our experience, this is not unusual when seeking to estimate the costs of projects over a five-year regulatory period. Nonetheless, in some cases, the estimates appear to be somewhat higher than we would expect and/or not fully supported by the underlying evidence.

6.36 The most significant investment is the TopSky ATC One ATM system, to be delivered through the COOPANS alliance, which will see the replacement of AirNav Ireland's main ATM system.[40] The new system is expected to be able to handle a higher volume of traffic, all else equal, while also facilitating more environmentally efficient flight trajectories. AirNav Ireland proposes to capitalise over €40m in respect of this project in RP4, with the total value of the investment amounting to almost €55m.

Asset Lives

6.37 Article 22(1) of the 2019 Regulation requires that assets are depreciated over their 'expected operating life'. This ensures that the costs of a project are allocated fairly across airspace users who will benefit from the project over time.

6.38 In most cases, the asset lives put forward by AirNav Ireland are reasonable. In some cases where we amended the asset life proposed by AirNav Ireland in RP3 we note that AirNav Ireland has not always followed this in its RP4 Business Plan. For example, the CEROC Midlife Upgrade, Security systems and upgrade works. For these projects we have again proposed the asset life that was set in RP3.

6.39 In reviewing the asset lives proposed for new projects, we compared the proposals with the expected useful life of the asset, including with reference to decisions on similar projects both in RP3 and elsewhere (such as in setting depreciation profiles for Dublin Airport assets). Specific details on proposed asset lives are set out in the appendix and shown in the published model.

Proposed Decision on the RP4 Programme

6.40 We recognise the value and ambition in the overall level of investment in AirNav Ireland's proposed Capex programme and the associated expenditure needed to deliver the programme. We consider it reasonable to accept AirNav Ireland's commitment that it will follow the specified measures to improve its effectiveness in delivering investments, measures which are supported elsewhere in our proposals. However, we again consider it unlikely that AirNav Ireland will now be able to deliver all of the projects it suggests over RP4 and note that it forecasts a larger level of delivery relative to the RP3 programme, against which it underdelivered.

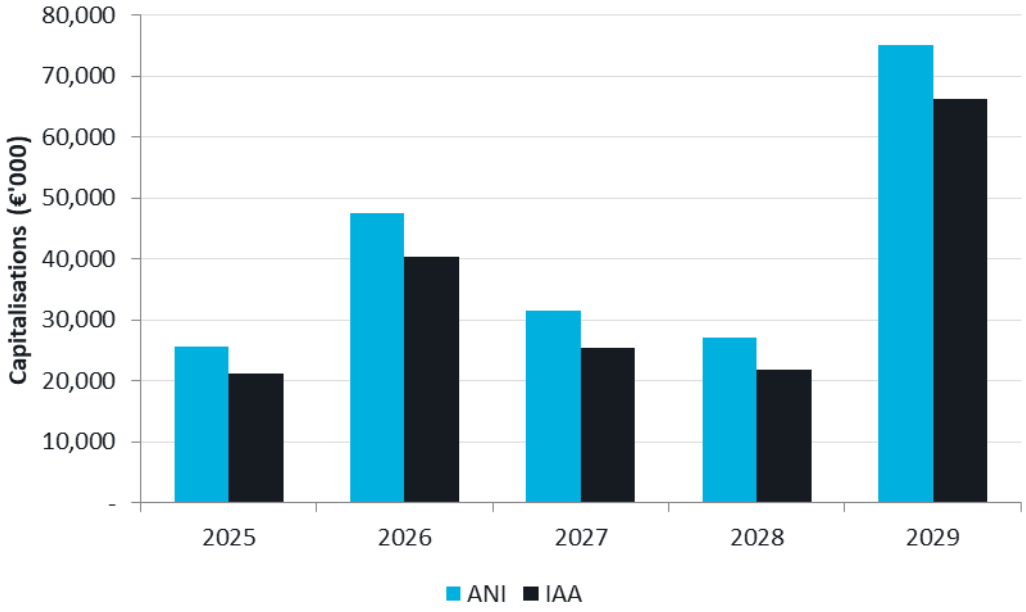
6.41 We considered whether a larger programme adjustment is now warranted for

[40] COOPANS is a partnership between AirNav Ireland and four other ANSPs, as well as the ATM systems supplier, Thales, for the delivery of ATM systems and functionality intended to steadily enhance safety and productivity.

RP4, however, balancing the larger nominal programme against the measures to improve delivery, we again provisionally consider that a 20% reduction in forecast capitalisations, relative to AirNav Ireland's proposal, is reasonable. In line with the approach we took with the RP3 Capex programme, rather than disallow or adjust the cost of any individual project, we propose to make a programme level adjustment, over 2025-2029.

6.42 However, we propose to exclude the TopSky ATC One project from the scope of this adjustment, as it will not follow the same process as the other projects, and the main capitalisation does not occur until 2029 in any case meaning that the capital costs earlier in RP4 include the cost of capital during construction which is incurred before capitalisation. Applying the 20% capitalisations reduction to the figures forecast by AirNav Ireland over 2025-2029, except for TopSky ATC One, means that the forecast level of capitalisations is reduced from €200m to €175m, with corresponding reductions to capital costs forecast over RP4. The 20% reduction is depicted in Figure 6.5 below.

Figure 6.5: Forecast Capitalisations over RP4 compared to AirNav Ireland



Source: IAA Calculations

6.43 We intend to adjust for outturn expenditure on an RP+1 basis. If, as was the case in RP3, AirNav Ireland underspends the RP4 capital costs allowance, this will be clawed back in RP5 via lower En Route and Terminal unit rates. If AirNav Ireland delivers more of the programme than we anticipate during RP4, and efficiently incurs associated expenditure in excess of what we have allowed for, this can be adjusted for in the unit rate for RP5 and/or added to the RAB from the start of RP5. Given the extent to which the 2019 Regulation already provides for the reprofiling of remuneration, and the extent to which AirNav Ireland can afford to increase investment, we consider that the adjustment should have no impact on the delivery of the programme, while bringing capital costs more closely in line with the level likely to actually materialise.

6.44 Finally, for the reasons set out above, we propose to adjust the assumed asset lives in relation to a number of RP4 projects. The individual adjustments are noted and listed in Appendix 1 and can be observed (and adjusted to test sensitivities) in the financial model.

Reporting and Reconciliation

6.45 As in RP3, and consistent with our proposal to apply a programme level rather than project level cost adjustment, the RP4 allowances will be reconciled at a programme rather than project (or grouping of projects) level. This will afford AirNav Ireland the flexibility to adjust the programme and prioritise projects as needed over RP4.[41]

6.46 We will monitor and report actual expenditure, and to publish biannually on our website an update of AirNav Ireland's progress against its proposed capital investment programme. The log will focus on what projects have been delivered or are progressing relative to the proposed timeline, material changes, and how expenditure is tracking against the Performance Plan assumptions.[42]

[41] Provided that any changes which add, cancel or replace 'major investments' are notified to the NSA, subject to consultation, and approved by the NSA within the period as is required by Article 22(4) of Regulation 317/2019.
[42] https://www.iaa.ie/commercial-aviation/economic-regulation/air-navigation-charges/regulatory-reporting-1

7. MET Eireann Aviation Services Division

7.1 This section sets out the proposed RP4 Determined Costs associated with Met Éireann's Aviation Services Division (ASD) ('MET ASD'). The proposed determined costs are set out in Table 7.1, compared to the final Business Plan submission from MET ASD.

Table 7.1: Total Proposed RP4 Costs, €m

Cost Category	MET ASD	IAA
Staff Costs (incl. pensions)	33.3	22.4
Other Operating Expenditure	19.9	12.9
Exceptional Items	7.2	6.3
Depreciation	3.5	3.5
Total	**63.9**	**45.1**

Source: MET ASD RP4 Business Plan, IAA Calculations. Figures are stated to be in real 2022 prices (Depreciation is in nominal terms).

7.2 MET ASD is a business unit of Met Éireann, Ireland's National Meteorological Service, which is maintained by the State under the UN Convention of the World Meteorological Organisation (WMO). The ASD is designated as Ireland's Meteorological Authority under the ICAO Chicago Convention on International Civil Aviation and since 2006 has been designated as a meteorological Air Navigation Services Provider (MET ANSP) under the EU Single European Sky Service Provision Regulation (**CIR EU 550/2004**[43]) and therefore has responsibility for the provision of regulated meteorological services to aviation. Regulatory compliance and oversight of the ASD is conducted by the IAA.

7.3 The primary goals of MET ASD are to:

- Provide meteorological services that support safety, regularity and economy in aviation within Ireland and beyond for both civil and military customers.
- Fulfil customer requirements by complying with International Civil Aviation Authority (ICAO) standards and recommended practices, relevant EU Single European Sky legislation, and also, as determined through assessments of the requirements of national aviation.
- Comply with applicable policies and regulations as laid down by Government.

7.4 The aeronautical meteorological services provided by ASD include, but are not limited to, the maintenance of the Meteorological Watch Office for the Shannon FIR, the provision of aeronautical forecast and warning services, and maintenance of five aeronautical meteorological stations.

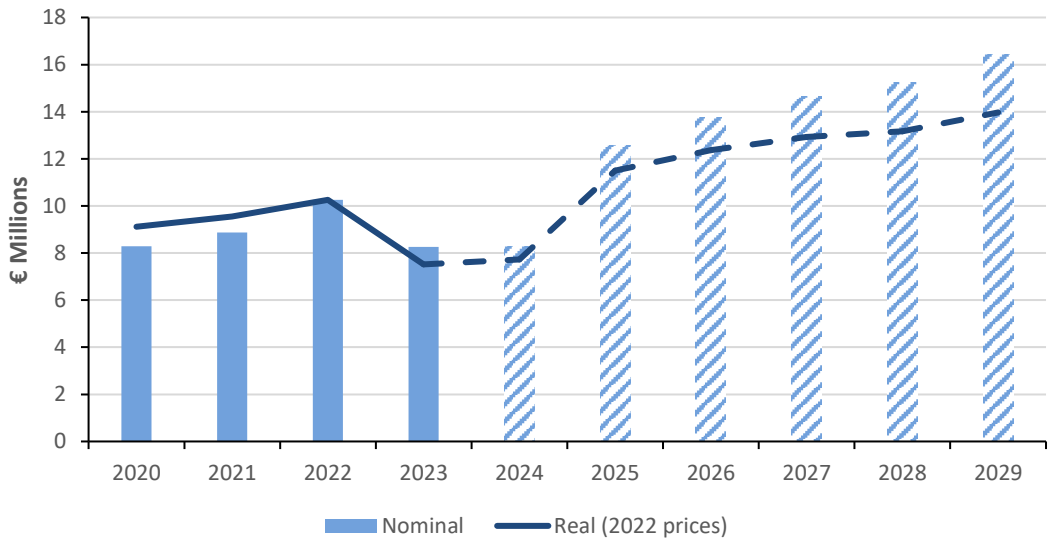
7.5 The IAA provided a guidance note to MET ASD on 8 March 2024 in relation to developing its RP4 Business Plan submission. Later in March, MET ASD

[43] Regulation - 550/2004 - EN - EUR-Lex (europa.eu)

completed a review of how core costs should be allocated to aviation, which ultimately arrived at the position that the core cost allocation key should be revised down from 27% to 17.4%. This reduction was based on the growing remit of Met Éireann, such as the Flood Forecasting Centre (FFC) and the establishment of a Climate Services Division, diluting the share of core costs attributable to aviation. The IAA reviewed and discussed this proposal with MET ASD and, to the extent that the review covered all aspects of any proposed changes to cost allocation, assessed it to be reasonable.

7.6 A first draft of the Business Plan was received by the IAA in May, and following clarifications and requests for further information, a final version was received in June. The final version is published alongside this consultation document. Figure 7.1 presents the total cost estimate in the final Business Plan, in both real 2022 and then nominal prices, compared to actual costs reported over RP3.

Figure 7.1: Met ASD Actual RP3 Costs (to 2023) and Forecast Costs (2024-2029)



Source: Met ASD RP4 Business Plan (for 2024 – 2029), Monitoring Reports (for 2020 – 2023) and IAA Calculations

7.7 As is apparent from the above, MET ASD is suggesting that costs will depart from historic levels and trends in RP4. In particular, there is a large step change in costs from 2025, and then further significant increases to 2029. For example, the most recent actual costs available is 2023, where the cost in nominal terms was €8.3m. The final Business Plan forecasts that nominal costs will rise to €16.4m in 2029, almost doubling, while total inflation over the same period is forecast at 13%. In real terms, this means that MET ASD is proposing a short-term real DUC CAGR of +10.5% across 2024 to 2029, relative to the EU wide target of -1.2%.

7.8 Given that it was not apparent from the draft Business Plan what was driving such changes, and whether it might contain any restructuring costs, or baseline adjustments for the purposes of Article 10 of the 2019 Regulation, we identified to MET ASD where additional substantiation would be required and obtained all of the underlying calculations. We then conducted a review of all of the

figures provided and the underlying estimates. We note that the cost increase is largely driven by Staff Costs and Other Operating costs, and can be broadly attributed to the following two factors:

1) Some technical issues in relation to the calculations and to the application of the provisions of the 2019 Regulation. Most significantly, while the figures are given as real 2022 prices, they are in nominal prices. There are also a number of remaining instances of apparent calculation errors or inadvertent double counting.

2) Step changes in costs/assumptions which appear to have been added to the cost estimates relative to RP3 levels. In some cases, there has been insufficient substantiation as to what has changed, or what benefits or deliverables will result from the increased expenditure.

7.9 In that context, our draft assessment of MET ASD Determined Costs for RP4 is significantly different to the MET ASD proposal in relation to Staff Costs and Other Operating costs. In its response to the Draft Decision, MET ASD can review and/or further substantiate its proposals in relation to factor #2 above. It may be helpful to consider step changes relating to service provision, and separately any step changes relating to how costs are being calculated.

7.10 In respect of service provision, the following are the three questions that need to be answered in respect of any proposed step change:

- Need: Explain and demonstrate the need or benefit of the step change relative to RP3, and that the cost estimates included for the cost line are entirely eligible.

- Additionality: Demonstrate that the step change is not already accounted for or partly accounted for elsewhere in the forecast and/or in the regulatory framework established by the 2019 Regulation (for example, inflationary increases will likely not be additional where cost lines are in real prices; increasing staffing to reduce the level of overtime will be offset by reduced overtime).

- Efficiency: Demonstrate that the scale of additional expenditure is efficient and proportionate with reference to the identified need, and that consideration has been given to any potential savings or efficiencies such that the step change is a centreline estimate of the likely associated cost.

7.11 Any changes relating to how costs have been estimated relative to RP3 might relate to, for example, a cost driver that was previously categorised as staff costs now being categorised as non-staff, or an eligible cost area which was not previously included but is now proposed for inclusion. Such changes could potentially constitute baseline adjustments for the purposes of assessing consistency with the Union-wide targets, and could be addressed as follows:

- What is proposed to be changed relative to RP3/previous periods?

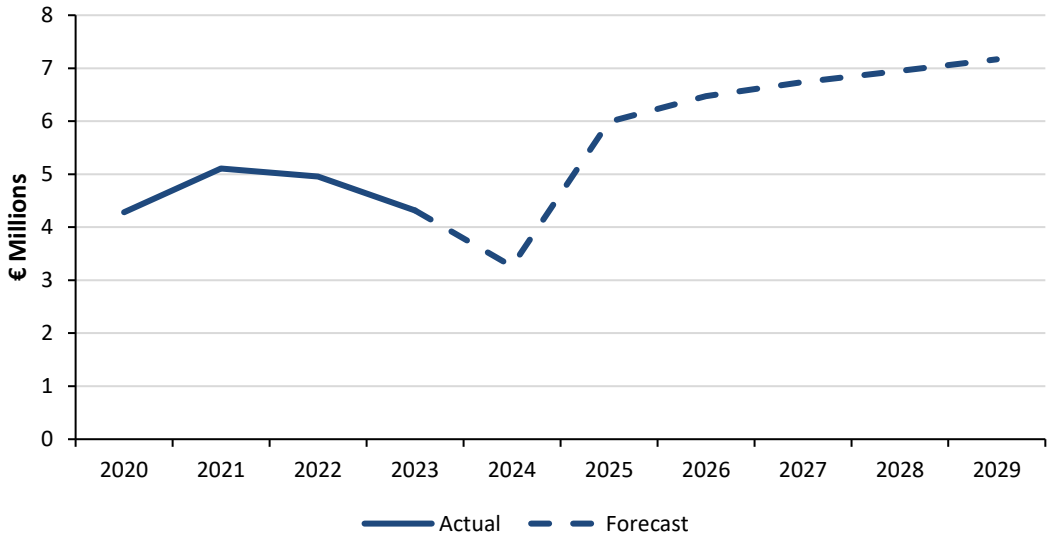
- Why has it been changed?

- What is the impact of the proposed change on the cost estimates? That is, what would the estimate be if the change were not made.

Staff Costs

7.12 A number of step changes are driving increases in MET ASD's forecast staff cost submission over RP4. MET ASD forecasts staff costs (including pensions) to now fall in 2024, but then increase significantly between actual 2023 costs and the start of RP4 and then to remain elevated throughout the period.

Figure 7.2: MET ASD Actual RP3 Staff Costs to-date (including pensions) and RP4 Forecast (stated by MET ASD to be in Real, 2022 Prices)

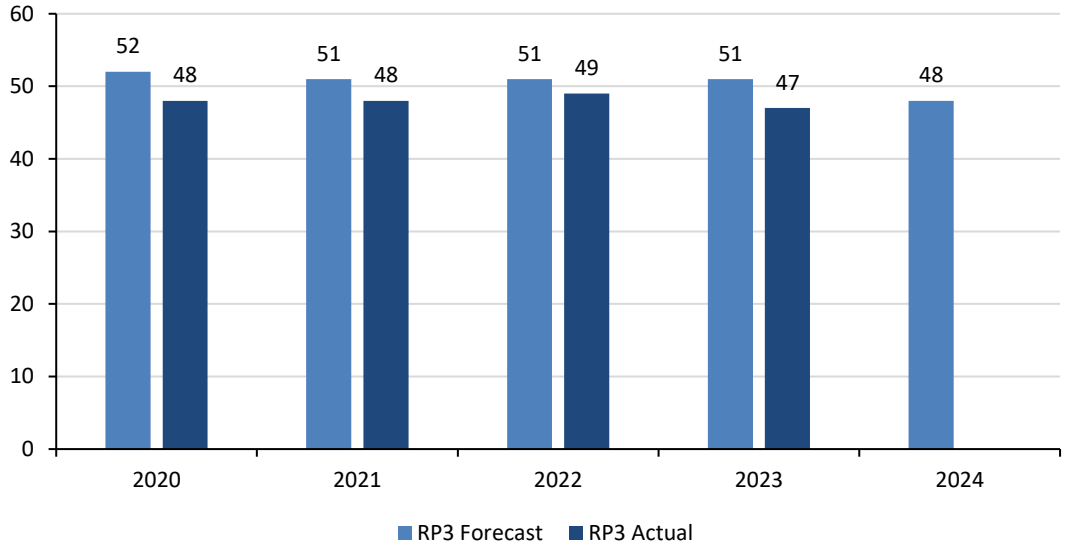


Source: MET ASD RP4 Business Plan (2024 – 2029), Monitoring Reports (2020 – 2023).

Forecast Staffing Levels

7.13 Met ASD's staffing profile is composed of corporate support staff (management and administrative staff), operational Met service provision staff, and technical/ICT support. In line with the 2021 Business Plan submission from MET ASD, the revised RP3 Performance Plan assumed that staffing levels would reduce slightly to 48 by 2024, largely due to efficiency improvements resulting from the introduction of the Aviation Modernisation and Automation Project (AMAP), which was included in the RP3 Performance Plan. Actual staff numbers have followed this profile quite closely, running slightly below forecast throughout RP3. However, MET ASD has now submitted that, by the end of this year, it expects to exceed the 2024 forecast by 4, bringing the total staffing complement to 52.

Figure 7.3: RP3 Staff Forecast compared to actual staffing



Source: Met ASD RP4 Business Plan and RP3 Decision Document

7.14 Met ASD submissions suggest that it will increase staffing levels ahead of the beginning of RP4, with approximately 8 additional operational MET staff (which we understand to be weather observers) compared to the 2023 outturn. Given that this step change relative to historic submissions and outturns was not substantiated in the Business Plan, we requested further information on the justification of this position. MET ASD highlighted the need to provide operational contingency to support unforeseen staff shortages, and to provide for leave entitlements. The final Business Plan now refers to the use of overtime to cover duties and the deployment of contingency staff between sites during RP3, to ensure that there was no impact on operations.

Table 7.2: Met ASD Forecast RP4 Staffing Requirement

Staff Forecast by Activity	2023	2024	2025	2026	2027	2028	2029
Corporate Support/Management	7	7	7	7	7	7	7
Forecasters	8	8	8	8	8	8	8
Supervisors	6	6	6	6	6	6	6
Observers*	18	23	26	26	26	26	26
Technical / ICT/Development	8	8	8	8	8	8	8
Total	**47**	**52**	**55**	**55**	**55**	**55**	**55**

Source: Met ASD RP4 Business Plan, MET ASD, and RP4 Issues Paper.

**Including Monitoring and Quality FTE.*

7.15 MET ASD is suggesting that additional headcount is required to reduce an overreliance on overtime, however it is not apparent to what extent actual overtime costs are therefore assumed to reduce relative to RP3 levels. Replacing overtime with additional headcount does not necessarily or typically lead to a material increase in cost. We are not aware of any service quality issues associated MET's service provision over RP3 which would support any

suggestion of under-resourcing at total level; at the annual consultations over RP3, to date, MET has set out how it has achieved and typically outperformed service quality targets on forecast accuracy and METAR timeliness. It does not highlight any specific changes between RP3 and RP4, why the approach taken to date is no longer suitable, or explain why MET ASD has decided to staff to levels below the Performance Plan assumptions over RP3, yet plans an upward step change relative to the RP3 Performance Plan for RP4.

7.16 Additionally, a key component of the business case for AMAP was the operational efficiency this project would bring about through enhanced automation of weather observation, with the original assessment ahead of RP2 being that the number of required observers would reduce by 12. This was moderated somewhat as part of the RP3 process in 2021, where the assumption was a total of 19 observers by 2024. However, MET now suggests that this trend will invert. MET acknowledges that there may be scope to deliver such reductions towards the end of RP4, and that research is underway to establish the potential in that regard. However, as a determined cost entity, it is necessary to take account of this, rather than forecasting headcount for the full regulatory period on the basis of the downside scenario where no benefit materialises.

7.17 In summary, the needs case as regards the proposed step increase in staffing levels, with a corresponding increase in costs, has not yet been made. For the draft determined costs estimate, we therefore assume staffing levels consistent with the 2023 outturn. As noted in Section 2, it is of course for MET ASD to ultimately decide the optimal balance between overtime and staffing levels, having regard to both service provision and cost. For any net step change to be remunerated through the determined costs, however, it needs to be substantiated ahead of the Final Decision as described above.

Technical Adjustments and Unit Costs

7.18 Aside from the proposed increase in staffing level assumptions, as shown above, MET ASD is forecasting an increase in overall staff costs in real terms at a level beyond that which could be explained by 8 new staff relative to 2023. In our assessment of these calculations, some methodological issues were identified:

- In calculating the total salary costs for each year of RP4, MET ASD included a proportionate adjustment to certain staff costs, based on the direct payroll cost, to account for overheads. This adjustment is based on a rule of thumb to account for core overhead costs such as office space, materials, use of telephones, and computers, in the Public Spending Code guidance on Central Technical References and Economic Appraisal Parameters.[44] The guidance is clear that if more specific estimates of such costs are available, they should be used. MET ASD also separately includes overhead costs proportioned based on floor area, salary, number of staff and technical equipment in Other Operating expenditure. More broadly, the determined costs are required to comply with the SES framework ahead of any other

[44] www.gov.ie/pdf/?file=https://assets.gov.ie/43554/70a378231f1540b0a09a0560dc9dd26f.pdf#page=null

framework, and these are not eligible staff costs under Article 22 of the 2019 Regulation in any case. As such, we removed this adjustment from the salary calculations to avoid double counting.

- While Met ASD states in the RP4 Business Plan that salary and pension costs have been presented in real terms, the calculations are based on expected 2024 salary costs in nominal terms. In addition, salary adjustments covering 2024 – 2026 contained in the Public Service Pay Agreement[45] were also included in nominal terms. We therefore deflated MET ASD's forecast staff costs to real 2022 prices, as required by the 2019 Regulation.

7.19 Following the refinement of the salary and pensions costs as described above, and given that MET ASD proposes to assume a flat staffing profile over RP4 after the initial step increase from RP3, fluctuations in salary and pension costs should only be driven by any real increase (i.e. any increase in pay which is above inflation), and potentially by minor uplifts due to staff moving to higher pay increments outweighing the effect of new staff joining at lower points of salary scales. However, despite these refinements, we failed to achieve such a profile, with salary and pension costs significantly increasing year-on-year. This suggests that there may remain other unexplained changes within the calculations.

7.20 In summary, in relation to technical issues:

- We re-state the Staff Cost proposals in real 2022 prices. We accept the approach proposed by MET ASD to base the wage growth assumptions on the public sector pay agreement, and 2% nominal growth thereafter to the end of RP4, but we apply this forecast in real rather than nominal terms.

- We calculate the unit cost trajectory based on the actual 2023 staff costs in 2022 prices, which excludes any further unexplained changes.

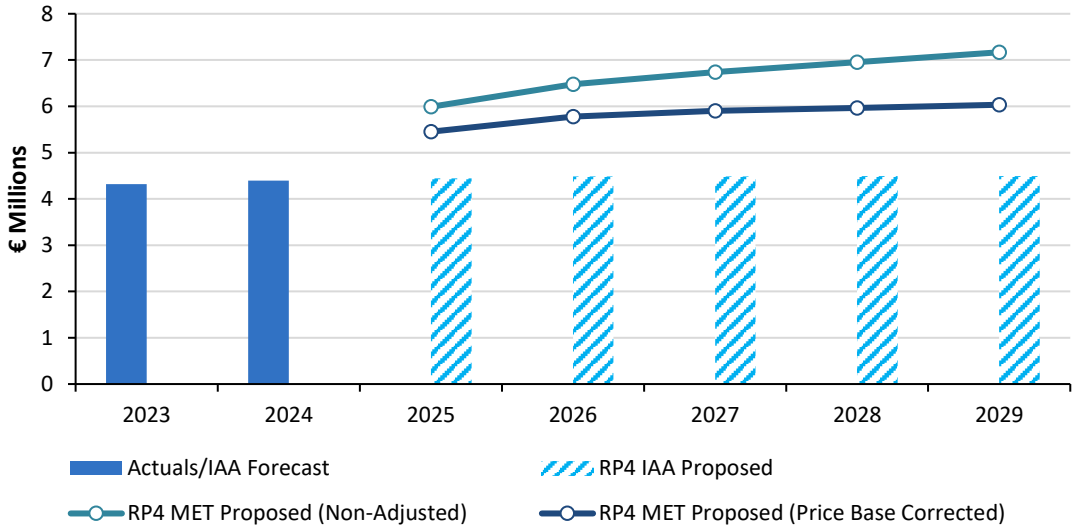
Conclusion

7.21 This results in unit staff costs growing closely in line with inflation, consistent with MET ASD's assumption underpinning it's 2021 Business Plan submission. The difference between ours and MET ASD's forecast for RP4 is primarily driven by our proposed approach remaining broadly in line with the approach we accepted in 2021. Finally, as noted above, a step change in the assumption on staffing levels for RP4 has not yet been justified as meeting the Need, Additionality, and Efficiency tests.

7.22 Our draft Met ASD staff cost forecasts for RP4 (including pensions) are shown in Figure 7.4 in real terms. Taking account of the current inflation forecast, we thus forecast that Met ASD staff costs will be just over €5.3m in nominal terms in 2029, up from €4.5m in 2023. As per the 2019 Regulation, this will be adjusted for within the RP4 period depending on outturn inflation.

[45] Public Service Agreement 2024-2026 (www.gov.ie)

Figure 7.4: IAA Proposed Met ASD Determined Staff Cost (incl. pension) estimates



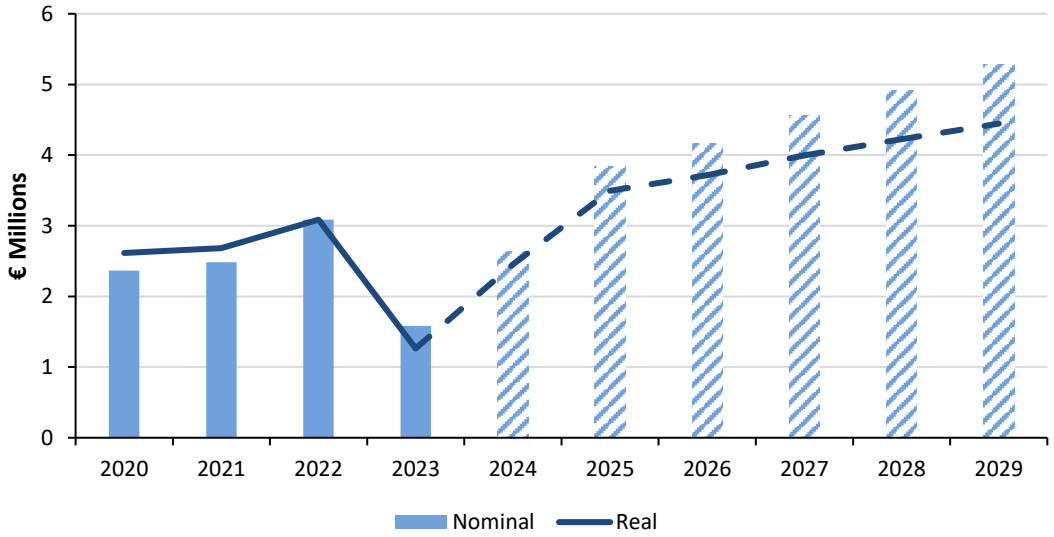
Source: IAA Calculations, Monitoring Report, MET ASD RP4 Business Plan. Real 2022 prices.

Other Operating Costs

7.23 Met ASD incurs Other Operating costs through its use of overarching Met Éireann services and instruments. These costs are allocated on the basis of whether they are direct or core costs. Direct costs are those which are incurred by aviation specific activities and services which are not shared with other Met Éireann divisions, while core costs are those which are associated with the basic meteorological infrastructure which is used by all Met Éireann divisions. Direct costs are therefore allocated in full to aviation, while only a portion of core costs are allocated to aviation, based on an allocation key.

7.24 As described above, the core costs allocation key has been reduced for RP4, primarily due to the growing remit of Met Éireann with, for example, the implementation of a Flood Forecasting Centre (FFC) and the establishment of a Climate Services Division. Overall, 17.4% of core costs are allocated to MET ASD activities for RP4, a reduction from 27% at the end of RP3.

Figure 7.5: MET ASD RP4 Other Operating Costs Forecast



Source: Monitoring Report (2020 – 2023) and MET ASD RP4 Business Plan (2024 – 2029)

7.25 As shown in Figure 7.5, MET ASD is suggesting that Other Operating costs will increase from €1.3m in 2023 (based on actual values reported to the IAA) to €4.5m in real terms by 2029, or €1.6m in 2023 to €5.3m by 2029 in nominal terms. As the core costs allocation key has been materially reduced, and no step changes have been identified/substantiated in core Other Operating costs other than the costs associated with a professorship, we would expect to see the core element of Other Operating costs reducing in real terms relative to RP3.

7.26 Similarly, Met ASD does not point to any step changes in the direct cost of meteorological service provision to aviation in the RP4 Business Plan, or to changes in how costs are being estimated. In addition, MET ASD service provision is not sensitive to traffic levels. Therefore, the forecast increase in traffic volumes over RP4 should not have a material impact on overall Met ASD costs. We would therefore expect direct Other Operating costs to remain relatively flat in real terms (i.e. adjusted for the impact of inflation) over RP4, similar to the MET ASD 2021 submission. The basis upon which Other Operating costs are forecast to significantly increase is not clear.

7.27 When the costs are corrected from nominal to real 2022 prices (i.e. the impact of inflation is removed to assess any justified step changes in costs), MET ASD still forecasts Other Operating costs to increase considerably between 2024 and 2025, before remaining at this level throughout RP4. While the underlying calculations have been provided to the IAA, we have been unable to verify any justification for this increase. Our assessment finds this forecast increase is largely due to additional direct cost figures being added to civil aviation, however the nature and drivers of these figures are not addressed. It is unclear whether any of these are related to the revised cost allocation methodology (i.e. if the reduced core allocation is being offset by more costs being directly allocated).

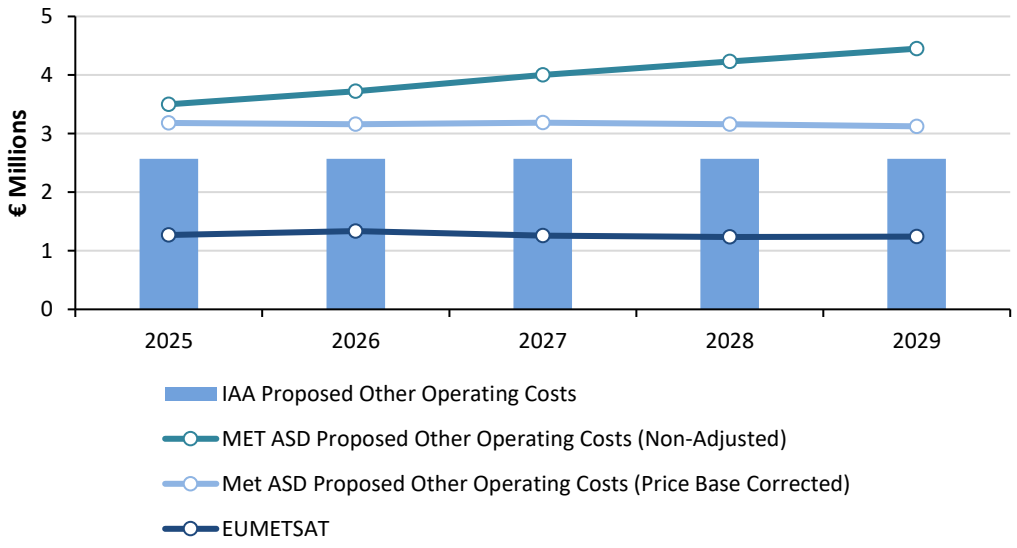
7.28 MET ASD's reported Other Operating costs have fluctuated significantly over RP3, whereas the RP3 Performance Plan assumption was that costs would be steady at c€2.4m in real terms. We sought clarification on the reasons for this. Notwithstanding this fluctuation, on average across RP3, the actual costs have been closely in line with the RP3 Performance Plan at €2.5m. On this basis, and without any reason to assess eligible and efficient costs as being higher than RP3, we propose to forecast real non-staff costs using the average historic actual non-staff costs from 2020 to 2023 (inclusive). This means that the costs are expected to grow in line with inflation from RP3.

7.29 We note, however, that Met Éireann intends to fund a Professorship to develop state of the art Artificial Intelligence (AI) and Machine Learning (ML) capacity to support all divisions within the organisation, including Met ASD. We therefore provide for an uplift to the historic average to account for this additional cost, which we consider as meeting the three-step test threshold.

7.30 We will review any detail which might be provided in response to the Draft Decision in respect of substantiating any step changes as eligible and efficient and may also carry out a further review to ensure that any appropriate cost reductions arising from the reduced core allocation key is reflected in the forecast. Figure 7.6 shows actual Other Operating costs from 2020 to 2023, and both IAA and Met ASD forecast non-staff costs for RP4.

7.31 In addition, Met ASD incurs costs related to the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT). EUMETSAT provides member states with meteorological imagery and data based on weather and climate monitoring from space. Met ASD provided details of the financial obligation related to EUMETSAT, which we also present below.

Figure 7.6: Other Operating Cost Forecasts



Source: IAA Calculations, Monitoring Report, MET ASD RP4 Business Plan. Real 2022 prices.

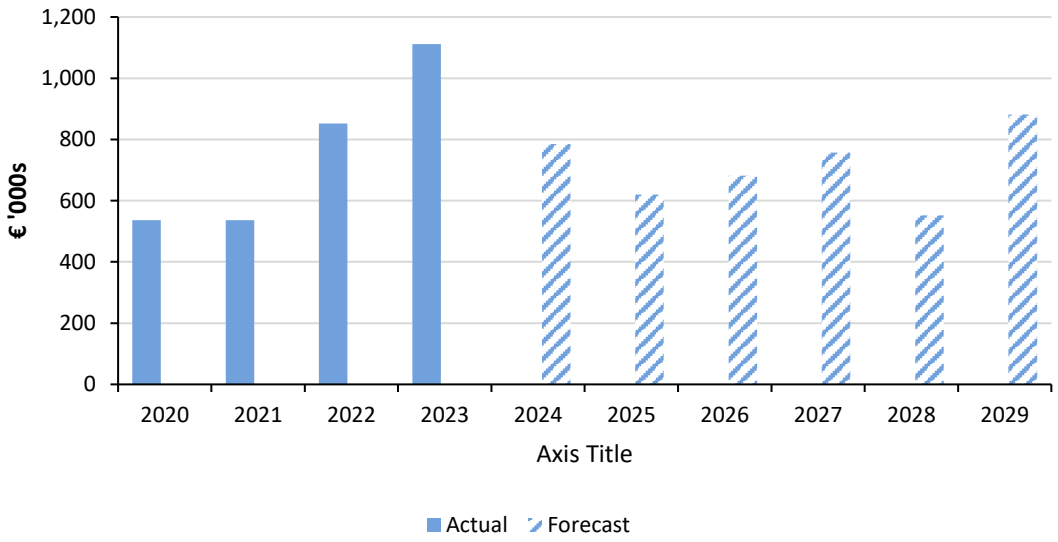
7.32 The costs of EUMETSAT are outside of the control of Met Éireann as contributions by each member state are apportioned based on Gross National

Income (GNI). The total cost to aviation is based on the core allocation key of 17.4%. We therefore adopt the MET ASD forecast for EUMETSAT, other than restating it in real 2022 prices rather than nominal prices.

Capital Expenditure and Depreciation Costs

7.33 MET ASD plans to implement a number of capital investment projects throughout RP4, as set out in the final Business Plan. While some capital projects are focused specifically on supporting aeronautical functions, others are cross-cutting and will benefit all Met Éireann divisions. MET ASD provided a breakdown of projects which are expected to be capitalised over RP4, along with RP3 projects which are carrying over.

Figure 7.7: MET ASD Actual and Forecast Depreciation



Source: Monitoring Report (for 2020-2023), MET ASD RP4 Business Plan (for 2024-2029)

7.34 As shown above, MET ASD is suggesting that depreciation will be broadly in line with the RP3 level. The spike in 2023 can be explained by the High-Performance Computing 1 project being capitalised, which is then offset in 2024, as AMAP became fully depreciated at the end of 2023. Similarly, the slight uplift in 2029 is as a result of the High-Performance Computing 2 project being capitalised, and an additional radar upgrade coming onstream.

7.35 We have reviewed the proposed Capex and depreciation costs from two perspectives:

- Reviewing proposed new RP4 projects to ensure that the associated need/benefit has been identified and relates to eligible costs and does not double count with projects already included over RP3.

- A technical review to ensure the correct mathematical application of the depreciation of investments and allocation keys across RP3/RP4.

7.36 These are addressed in turn below. Table 7.3 summarises our forecast Met ASD capital costs over RP4.

Table 7.3: Overview of Met Capital Projects and Depreciation for RP4, €m

Project	Project Cost	Asset Life (Yr)	Depreciation over RP4	Delivery Year	Allocation
Met Self Briefing Upgrade	0.15	5	0.15	2025	Direct
RADAR Upgrade	19.23	25	0.26	2025	Core
METCOM	1.86	10	0.23	2025	Core + €250k Direct
AUTO OBS	0.50	8	0.25	2026	Direct
IMAMS	6.96	5	0.48	2022	Core
IMAMS 2	8.00	5	0.84	2027	Core
HPC 1	6.69	5	0.70	2023	Core
HPC 2	8.69	5	0.30	2029	Core
Data Visualisation System	0.80	5	0.26	2025	Core

Source: Met ASD and IAA Calculations, Nominal Prices

Review of Proposed Investments

7.37 The radar upgrade project is by far the largest planned capital investment for RP4. This investment, however, contains 6 individual upgrades, with each, based on MET ASD's calculation, providing a useful life of 25 years. MET ASD states that the current radar network is nearing the end of its useful life and is not sufficient to fully support the development of effective nowcasting algorithms or the automation of aviation observations. Over RP4, the Shannon and Cork radar systems will be upgraded, along with three additional sites. MET ASD has stated that an additional three RADAR upgrades will come onstream at a rate of one per year, beginning in 2027.

7.38 The METCOM project, part of Common Project 1 (CP1) which aims to support the implementation of the European Air Traffic Management Master Plan provided for under Regulation (EC) No 550/2004, will be implemented in late 2024 and will provide improvements to communications and delivery systems to optimise the use of MET information. This is being delivered ahead of the CP1 target of the end of 2025, but slightly later than originally indicated by MET ASD in the RP3 Business Plan. Given the importance of the METCOM project to achieve compliance with CP1, direct costs of €250k are attributed to aviation, while the remainder is proportioned based on the core cost allocation key.

7.39 High Performance Computing 1 (HPC 1), based on MET ASD's assessment, is due to come to the end of its estimated useful asset life in 2027. This project, MET ASD states, has been very successful and has provided improved, higher resolution data which it expects to significantly enhance forecast quality. MET ASD has indicated that further investment will be required from 2028 onwards to ensure the provision of sufficient computer capacity and to accommodate changing requirements. The ASD indicates that through discussion with international peers, along with current experiences with project costs, they estimate the cost of HPC 2 to be 30% greater than HPC 1. MET ASD currently

forecasts HPC 2 to be implemented by 2029.

7.40 Similar to HPC 2, IMaMS 2 is a continuation of ImaMS 1, which is Met Éireann's business continuity and disaster recovery solution. As with ImaMS 1, the asset life of this project is contract based. This project is non-aviation specific as it applies to all divisions using the Met Éireann IT infrastructure, and as such, the charge to aviation is based on the core cost allocation key. The project encompasses an ICT solution to enable diversification and service replication across two sites to meet recovery time objectives and recovery point objectives. The MET ASD Business Plan indicates that the cost of this project has been estimated based on tender responses to ImaMS 1 and an assessment of inflation over the interim period.

7.41 The Data Visualisation System is a new project for RP4, which MET ASD states is a core requirement, without which it would not be possible to produce quality forecasts. The project provides for visualisation of meteorological data, analysis of all relevant meteorological parameters, and a production suite for aviation forecasts and warnings. The ASD indicates the asset life of this project is based on a specified contract duration, and that approval has been received from the Met Éireann Management Committee and the Department of Housing's ICT Governance Committee. MET ASD indicates that this project will provide capacity to develop additional observational and forecast services necessary for future compliance with CP1 and with the ICAO Global Air Navigation Plan System block upgrades.

7.42 We consider that the details provided are sufficient to conclude that the projects are eligible for inclusion in the RP4 determined costs, the associated need/benefit has been established, and the cost estimation assumptions are reasonable in the context of their materiality, albeit high level estimates in some cases.

Technical Review

7.43 In forecasting the depreciation profile, we have made minor adjustments to the Net Book Value (NBV) of some assets to reflect actual asset values at the point of capitalisation. Small amounts of depreciation already remunerated in RP3 are excluded to ensure no double counting. All asset lives carrying over from RP3 remain unchanged, and we accept, and have used, MET ASD's depreciation estimate for 2024.

7.44 The allocation of capital costs to aviation on foot of the capital projects outlined above is generally based on the core cost allocation key (i.e. 17.4%). However, unique allocation keys are applied to both the Data Visualisation System project and the AUTO OBS project, which MET Eireann has substantiated as follows:

- Charges to aviation for the Data Visualisation Project are based on an allocation key of 33%. MET ASD states that while this project will support both aviation and general forecasting activities, it will not be used to support other Met Éireann divisions. As such, this allocation is based on the number of forecasters assigned to aviation relative to the total number of Met Éireann forecasters.

- Depreciation related to the AUTO OBS project, which MET ASD state will provide additional visibility sites in the vicinity of major airports, are all directly proportioned to aviation as this project is not cross-cutting. MET ASD indicates that this project will provide aviation observers and forecast teams with early warning of degenerating visibility and cloud ceiling conditions. Deployment of this project, according to MET ASD, will provide real time observational data from remote but operationally significant areas in the vicinity of Dublin Airport, support the TAF/TREND production and amendment process, and improve downstream products such as RVR.

- The Met Self Briefing Upgrade project is also allocated entirely to aviation. MET ASD indicates that this project, originally part of the METCOM project, has become standalone for RP4. MET ASD states that this project is due to be completed during 2024. This project, as indicated in MET ASD's RP3 Business Plan, will allow aviation users of Met Éireann's meteorological services to more readily access bespoke regulated data in a user-friendly configurable environment.

7.45 We assess the above allocation proposals to be reasonable and consistent with the 2019 Regulation, and have reflected them in the draft determined costs.

Charges to Aviation and Allocation

7.46 Met Éireann's accounting system calculates charges to aviation. Prior to the calculation of En Route and Terminal costs, the system strips out the costs of service to general aviation, the military, and other non-applicable costs.

7.47 As discussed above, the total costs allocated to aviation comprise two main categories:

- Direct costs, which are the costs incurred by aviation specific activities and services which are not cross cutting with other Met Éireann activities. These are allocated in full to aviation.

- Core costs, which are the costs associated with the basic meteorological infrastructure upon which services to aviation depend. A proportion of these (17.4% for RP4) are allocated to aviation.

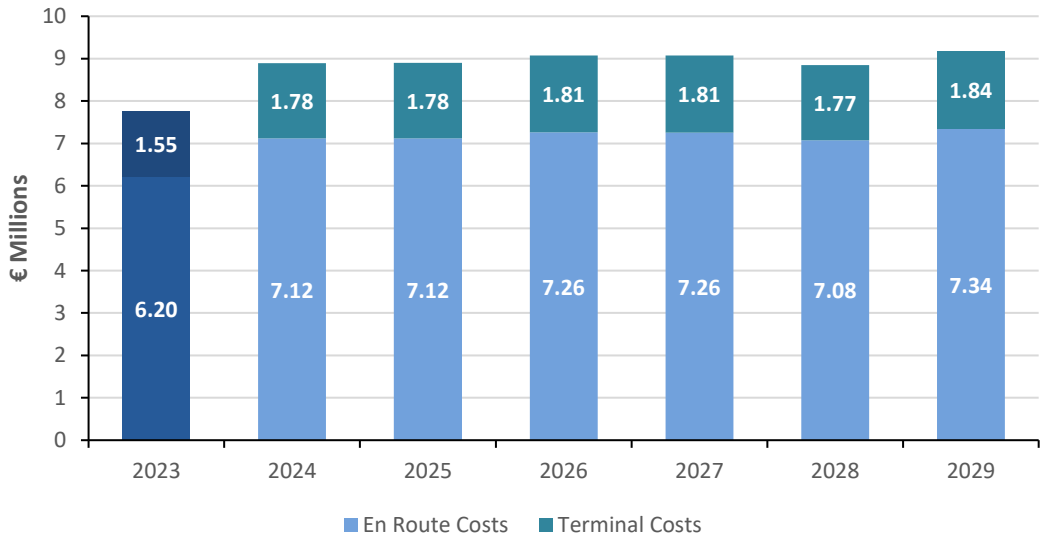
7.48 Following a recommendation by the IAA (then CAR), charges to civil aviation have been split 80:20 between En Route and Terminal services respectively. We are not aware of any material shift having since occurred in the extent to which MET ASD workload is likely to be driven by En Route relative to Terminal services. We consider that any deviation from this would require an assessment of the use of various meteorological services by organisations operating or providing services within the different charging zones. We have ascertained the level of data available to us in respect of reassessing these allocation keys on a bottom-up basis, however, there is very little data available to support such an assessment. On that basis, and on the grounds of proportionality, we do not propose to carry out such a review for the RP4 Performance Plan.

7.49 We have, however, assessed these allocations with reference to the PRB's

Review of the Reporting of Meteorological Costs for Air Navigation Services.[46] The En Route/Terminal split of 80/20 benchmarks reasonably against comparators. It is also a similar split to that estimated in respect of AirNav Ireland costs for RP4 (slightly lower En Route allocation than for AirNav Ireland), a result which benchmarks as appropriately in line with the average position across the SES area, based on the PRB review.

7.50 Figure 7.8 below therefore shows the proposed determined cost inputs in real 2022 prices, compared to 2023 actual costs. As noted above, inflation allowances are then added to these estimates, and any inflation beyond the levels forecast will be further added, as per the 2019 Regulation.

Figure 7.8: Proposed Met Total, En Route, and Terminal Costs for RP4



Source: IAA calculations, Monitoring Reports. Note: 2023 is actual outturn. Real 2022 prices, depreciation included as nominal.

[46] Review of the reporting of meteorological costs for air navigation services (europa.eu)

8. NSA, Member State, and Eurocontrol Costs

8.1 This section sets out the proposed approach for cost allocation and cost forecasting for the IAA's costs in its role as National Supervisory Authority (NSA). It also sets out the proposed 'Other State' costs, which include Eurocontrol costs, and Member State costs of the Department of Transport associated with ANS.

8.2 This category of costs operates on the basis of full cost recovery rather than incentive regulation as is the case for the ANSPs, i.e. the outturn costs are fully passed through to the unit rates paid by airspace users. These costs are therefore not further explicitly adjusted for inflation, and are included here in nominal terms, except where stated otherwise.

8.3 The legal basis for including these costs is set out in Article 22(1)(a) of the 2019 Regulation. The NSA's actual invoiced costs for a given year are adjusted for in the unit rates on an n+2 basis, as set out in Article 28 of the 2019 Regulation. It is intended that actual costs of the NSA would be invoiced to AirNav Ireland as they are incurred, likely on a quarterly basis in arrears. The actual costs incurred and any variance from the cost forecast will form part of the annual consultations on outturn costs.

Issues paper

8.4 In the Issues Paper, we outlined our proposed approach to cost allocation for the NSA in RP4. The method was two-fold:

1) The categorisation of NSA costs as 'direct or 'core'.

2) The distribution of NSA costs between the En Route, Terminal, and North Atlantic Communications (NAC) charging zones.[47]

8.5 Direct costs are the operational costs which are directly associated with the regulatory activity. Core costs are the costs incurred by the IAA but are not directly related to regulatory operations (for example, HR, finance, facilities, etc.). We sought the opinion of stakeholders on whether we should amend our approach to the NSA costs in RP4.

NSA Costs

8.6 The cost submission from the NSA is based on the IAA's 2024 budgeted costs. The submission was developed by the finance department within the IAA and has been reviewed by the economic regulation division, in particular to ensure that it contains only eligible costs, is consistent with the approach taken to other cost forecasting and is consistent with the IAA's new cost allocation and fees/charges model which was the subject of a consultation in 2023.[48]

8.7 Year to date figures up to the end of May 2024 show that NSA costs are

[47] NSA costs allocated to NAC are excluded from the scope of the Performance Plan and collected separately.
[48] consultation-on-iaa-funding.pdf

trending somewhat below the budgeted amount for 2024. We will review further year to date actuals ahead of the final Performance Plan and may update the 2024 baseline to reflect the same.

8.8 In RP4, the IAA sections which will be directly allocated to the NSA include the IAA's Air Navigation Services Division (ANSD), Airspace Division and Search and Rescue (SAR). As per the fees model, 100% of the costs from these sections is assigned to the NSA. The economic regulation division is comprised of seven cost centres within the IAA. As ANS oversight, including the development of the RP4 draft Performance Plan, is only one of the responsibilities of the economic regulation division, one seventh of the costs relating to the staff of this cost centre are allocated to the NSA. The allocation key of 14.3% has therefore been used.

8.9 The proportion of the IAA's total corporate services costs which are allocated to each individual revenue generating division is based on its share of direct costs in the IAA's full cost base. On average across RP4, 18.7% of the IAA's corporate services costs in each year are allocated to the NSA as core costs.

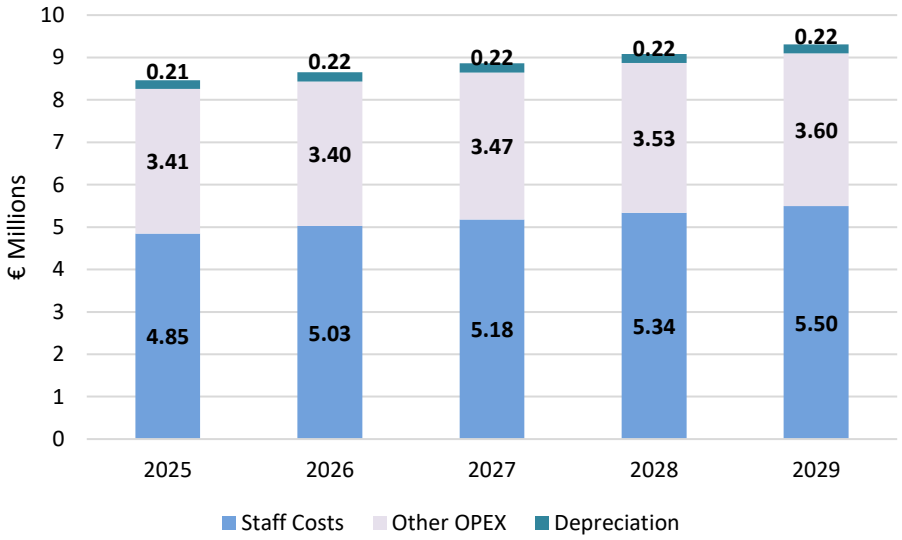
Table 8.1: Overview of Proposed NSA Costs 2024-2029, € million

Cost Type	2024	2025	2026	2027	2028	2029
Staff	4.45	4.85	5.03	5.18	5.34	5.50
Of which is pension	0.73	0.77	0.80	0.83	0.85	0.88
Other Opex	3.33	3.41	3.40	3.47	3.53	3.60
Depreciation	0.06	0.21	0.22	0.22	0.22	0.22
Total NSA	**7.85**	**8.46**	**8.65**	**8.86**	**9.08**	**9.31**

Source: IAA Calculations (nominal prices)

8.10 IAA costs associated with other operational functions such as licencing, aerodrome safety and security, airworthiness, and aviation security, have not been apportioned to the NSA.

Figure 8.1: NSA Total Staff Costs , Other Operating Costs, and Depreciation Across RP4



Source: IAA calculations (nominal prices)

8.11 As shown below, NSA costs are expected to stay broadly flat in real terms.

Table 8.2: Total NSA costs, real 2022 prices

	2024	2025	2026	2027	2028	2029
2022 Index	107.70	109.86	112.00	114.20	116.46	118.79
NSA Costs (€m)	7.28	7.70	7.73	7.76	7.80	7.84

Source: IAA Calculations. Real 2022 prices.

Staff costs

8.12 In response to the Issues Paper, Ryanair stated that it expects the headcount forecasts for the NSA to become more accurate following the separation/merger process. The staff number and cost forecasts outlined below were developed based on the IAA's projected individual staff level payroll costs for the years 2025 and 2026. The payroll figures for the years 2027-2029 use the totals from the previous year and are assumed to grow at 3% per year in nominal terms (or 1% per year in real terms).

8.13 Relative to RP3, two additional staff members are added to the NSA in the SAR division. Other than that, NSA staffing levels are assumed to remain broadly consistent with current levels, and no further staff additions to the NSA are currently assumed for the remainder of the reference period. The additional staff members in the SAR division are required due to a material change in the volume of oversight conducted by this unit since RP3, due to the new SAR contract, which now includes an additional helicopter and a fixed wing component provided by a separate operator.

Table 8.3: NSA Headcounts RP4

NSA section	Headcount	Allocation to NSA	NSA Staff (FTE)
Economic Regulation/ Consumer affairs	6	14.3%	1
ANSD	12	100%	12
Airspace	6	100%	6
SAR	5	100%	5
Corporate Services	46	18.7%	9
Total NSA			**33**

Source: IAA calculations (nominal prices)

8.14 For RP4, 33 FTEs are therefore directly allocated to the NSA. Table 8.4 below then shows the total forecast staff costs by section.

Table 8.4: NSA Staff Costs RP4, € million

NSA Section	2025	2026	2027	2028	2029
Economic Regulation	0.11	0.12	0.12	0.13	0.13
ANSD	2.10	2.18	2.25	2.32	2.39
Airspace	0.76	0.79	0.81	0.83	0.86
SAR	0.81	0.84	0.87	0.89	0.92
Corporate Services	1.06	1.10	1.13	1.16	1.20
NSA Total	**4.85**	**5.03**	**5.18**	**5.34**	**5.50**

Source: IAA calculations (nominal prices)

8.15 Staff within the IAA ANSD, airspace, and search and rescue divisions are directly allocated to the NSA. The direct costs equivalent to 1 FTE from the economic regulation team is allocated to the NSA for RP4. The nature of the work carried out by this section is cyclical and staff have other responsibilities relating mostly to the determination of the maximum level of airport charges at Dublin Airport and oversight of the implementation of the EU Slot Regulation 95/93, including setting the slot capacity of Dublin Airport. These costs are recovered separately from the users of Dublin Airport only, as per the IAA fees model.

8.16 On average for each year of RP4, 18.7% of corporate services staff costs are apportioned to the NSA. As explained above, the allocation key is derived from the proportion of each regulatory division's direct costs within the IAA's total direct costs, in line with the new fees and charges model. The estimates of the NSA's direct costs make up 18.7% of the total estimated direct costs of the IAA over RP4.

Other Opex

8.17 Table 8.5 below presents a forecast of the NSA Other Operating cost forecasts for RP4. The costs are again based on the 2024 IAA budget. They are then forecast to stay flat in real terms, growing at a rate of 2% per year in nominal terms, in line with inflation forecasts. The first four items in the table (travel, training, administration and consultancy) relate directly to the NSA divisions.

Core operating costs are captured in the corporate services non-staff Opex figures. As with staff costs above, on average in each year of RP4, 18.7% of corporate services Opex are allocated to the NSA.

8.18 Other than the inflation related trend, there is a small downward step change in Other Opex from 2026, relating to rental of a property of the former Commission for Aviation Regulation. This cost is no longer expected to be incurred from 2026.

8.19 Corporate services Other Opex encompasses a wide range of items. The main components of the corporate services non-staff Opex included in Table 8.5 below (rent and rates, utilities, insurance and software maintenance contracts) represent 62% of the corporate services non-staff operating costs in 2025 and 64% of the total for each year thereafter.

Table 8.5: NSA Forecast Costs for RP4, € million

Cost Item	2025	2026	2027	2028	2029
Travel	0.22	0.23	0.23	0.23	0.24
Training	0.07	0.08	0.08	0.08	0.08
Administration	0.25	0.25	0.26	0.26	0.27
Consultancy	0.40	0.41	0.42	0.42	0.43
Corporate Services non-staff opex	2.46	2.44	2.48	2.53	2.58
Of which is Rent and property rates (D'Olier St.)	0.64	0.65	0.67	0.68	0.69
Of which is Utilities.	0.07	0.07	0.08	0.08	0.08
Of which is Insurance	0.10	0.12	0.12	0.12	0.12
Of which is Software Maintenance Contracts	0.72	0.73	0.74	0.75	0.77
NSA Total	**3.41**	**3.40**	**3.47**	**3.53**	**3.60**

Source: IAA Calculations (nominal prices)

Depreciation

8.20 Table 8.6 below gives an overview of the forecast NSA depreciation for RP4. The RP4 capital projects relate to an annual average IT and office equipment Capex amount of €0.4m in each year, and the MySRS capitalisation of €6.5m from January 2025. MySRS is a project to digitalise various regulatory processes including, for example, oversight programmes and the licensing of ATCOs.

8.21 The below depreciation figures include the depreciation of existing 2023 IT assets such as mobile devices, printers and video conferencing media devices in 2025 and 2026. As all of the projects relate to the IAA's central forecasts, the NSA allocation key of 18.7% is again applied. The NSA does not propose to include a return on capital.

Table 8.6: NSA Proposed Depreciation Costs, RP4 (€ million)

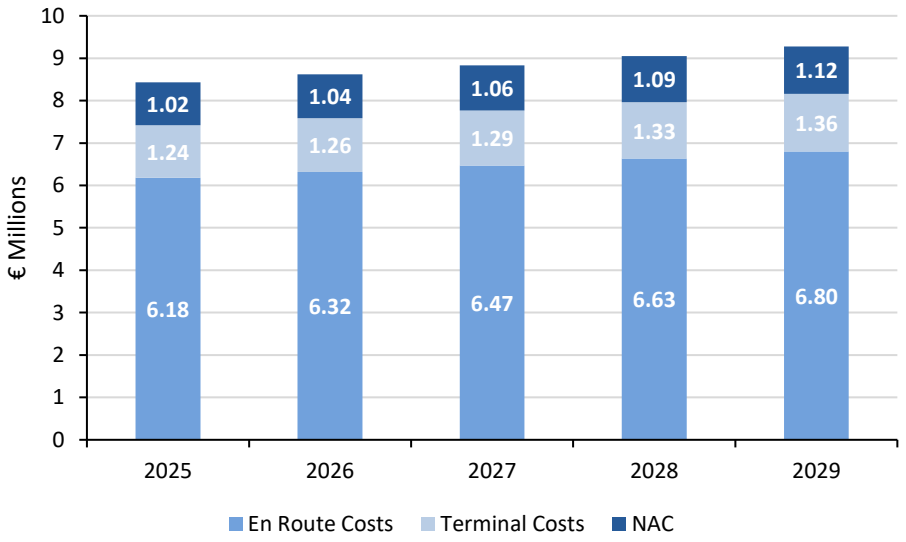
Project Title	Total Cost	Asset Life (Yrs)	2025	2026	2027	2028	2029
IT & Office Equipment	1.7	3	0.23	0.34	0.34	0.34	0.34
2023 ICT Assets	0.46	3	0.06	0.04			
My SRS	6.5	8	0.81	0.81	0.81	0.81	0.81
Total IAA			1.10	1.19	1.15	1.15	1.15
Total NSA (18.72%)			**0.21**	**0.22**	**0.22**	**0.22**	**0.22**

Source: IAA Calculations (nominal prices)

Allocation of NSA costs

8.22 We propose to follow the methodology of cost allocation used in RP3 for the NSA costs. The costs are therefore split between En Route (73%), Terminal (15%), and North Atlantic Communications (12%). This means that 12% of all of the NSA costs listed above are allocated outside the scope of the Performance Plan and would be collected separately.

Figure 8.1: Proposed NSA total, En Route, Terminal, and NAC Costs for RP4



Source: IAA calculations (nominal prices)

Issues Paper Responses

8.23 In response to the Issues Paper, while Aer Lingus did not see sufficient evidence in the consultation to support a review of the proposed allocation keys, Ryanair stated that it would like to see further details on how the NSA costs were distributed between En Route, Terminal and North Atlantic Communications.

8.24 These allocations (73% En Route, 15% Terminal, 12% NAC) remain in line with the allocations used previously within the IAA, before the separation process. The allocations were initially based on the proportions of revenue which were

being generated by each of the three charging zones. We do not see an obvious alternative way to distinguish between the NSA workload which is driven by oversight of each of these areas, nor is there any particular guidance which specifically addresses the allocation of NSA costs to charging zones that we are aware of.

8.25 We are therefore of the view that a granular approach to calculating the allocations is likely to be disproportionate and that for RP4, the RP3 allocation keys remain reasonable. We are willing to consider any other specific suggestions that respondents may have as regards high-level allocation keys that could be used.

Other State Costs

8.26 Article 22(1) of the 2019 Regulation allows for the inclusion of other state costs such as those of the Department of Transport (including ICAO and ECAC subscriptions) and Eurocontrol. Like NSA costs, these costs are not subject to cost risk sharing. The state bodies' actual costs are thus adjusted for in the unit rates on n+2 basis. These costs are not separately adjusted for inflation.

8.27 Table 8.7 below provides an overview of the cost estimates for each relevant organisation. The Department of Transport costs relate to direct costs only. We propose that costs for these organisations will be allocated as follows, which is unchanged from RP3: 100% of Eurocontrol, ECAC and ICAO costs to the En Route charging zone, while costs of the Department of Transport will follow the allocations of the NSA (73% En Route, 15% Terminal, 12% NAC).

Table 8.7: Overview of Other State Costs, € million

Entity	2025	2026	2027	2028	2029
DoT	2.06	2.09	2.12	2.16	2.19
ICAO	0.54	0.54	0.54	0.54	0.54
ECAC	0.04	0.04	0.04	0.04	0.04
Eurocontrol	8.61	8.76	8.74	8.71	8.72
Total	**11.25**	**11.42**	**11.44**	**11.44**	**11.49**

Source: Eurocontrol, Department of Transport (nominal prices).

8.28 The scope of, and the approach to, Other State costs are therefore unchanged from RP3.

9. Safety KPA

9.1 The KPI within the Safety KPA is the Effectiveness of Safety Management (EoSM), across five components. The EoSM standards for RP4 have been categorised as follows:

- Level A, which is 'Informal Arrangements'. Safety Management System (SMS) processes and/or requirements have not been agreed at the organisation level; they are either not routinely undertaken or depend on the individual assigned to the task.

- Level B, which is 'Defined'. SMS processes and/or requirements are defined but not yet fully implemented, documented or consistently applied.

- Level C, which is 'Managed'. SMS processes and/or requirements are fully documented and consistently applied.

- Level D, which is 'Resilient'. Evidence is available to provide confidence that SMS processes and/or requirements are being applied appropriately and are delivering positive, measurable results.

9.2 EASA has provided guidance material for the implementation and measurement of the safety KPI, and other safety performance indicators (SPIs) for RP4.[49]

9.3 For RP4, the IAA intends to set local targets for AirNav Ireland in alignment with the Union-wide targets, with EoSM standards that are Level D in the objective of safety risk management, and at least Level C in the other safety objectives of culture, policy, promotion, and assurance. These standards will ensure consistency between local and Union-wide targets.

Union-Wide Targets

9.4 The RP4 Union-wide targets for the five components are shown in the table below; these are nominally unchanged from the RP3 targets set in 2019 and left unchanged in 2021, and the revised Irish RP3 Performance Plan. However, the methodology underlying the measurement of the KPI has been updated by EASA, as noted above. The conditions to be met by ANSPs for reaching a certain target level have become more stringent in comparison to RP3. As a result, the safety performance target standards for RP4 are not directly comparable with those of RP3, and equate to an improvement in safety management. The Union-wide EoSM targets are not further disaggregated between Member States, instead applying uniformly.

[49] https://eu-single-sky.transport.ec.europa.eu/easa-guidance-material-implementation-and-measurement-safety-key-performance-indicator-skpi-and_en

Table 9.1: Safety KPA – EU-Wide Target EoSM Standards

Safety Management Objective	2029
Safety policy objectives	C
Safety risk management	D
Safety assurance	C
Safety promotion	C
Safety culture	C

Source: Commission Implementing Decision (EU) 2024/1688

Local Targets

9.5 In 2022, AirNav Ireland met the EoSM target of 'Managed' (level C) in Safety Policy and Objectives, Safety Assurance, Safety Promotion and Safety Culture. However, performance was downgraded in relation to the EoSM target for Safety Risk Management from 'Assured' (level D) to 'Managed' (level C). This target was again missed in 2023.

9.6 Consistent with the provisions of the Implementing Decision, the IAA intends to set targets for AirNav Ireland which are consistent with the Union-wide targets during RP4 by ensuring EoSM that is at least 'Level D' in the objective of safety risk management and at least 'Level C' in the other safety objectives of culture, policy and objectives, promotion and assurance. It is proposed that these targets are set for each year of RP4, meaning that the standards are to be achieved by 2025 rather than by 2029.

Table 9.2: Proposed RP4 Targets for AirNav Ireland

Safety Management Objective	2025	2026	2027	2028	2029
Safety policy objectives	C	C	C	C	C
Safety risk management	D	D	D	D	D
Safety assurance	C	C	C	C	C
Safety promotion	C	C	C	C	C
Safety culture	C	C	C	C	C

Source: IAA

9.7 To assess the compliance of AirNav Ireland with the required level of safety performance, the IAA will oversee AirNav Ireland to provide assurance of the effectiveness of the level of safety management. This oversight, based on risked based principles, will include, inter alia, audits, inspections, reviews of safety performance data and reviews of changes to the functional system. The IAA will continue to conduct an annual review of the EoSM questionnaire, based on actual outcomes each year, and impose remedial measures in any areas of under-performance.

Measures to Achieve Targets

9.8 In its RP4 Business Plan, AirNav Ireland has set out a detailed description of its safety management processes, safety culture, and the measures it plans to

undertake in RP4 in order to ensure compliance with the required level of safety performance, including in relation to its Human Factors (Fatigue, Stress and Roster management) policy, Safety Culture, and Just Culture policy.

9.9 Given that AirNav Ireland did not meet the target for safety risk management in 2023, it has put in place a project plan to achieve Level D in safety risk management, and maintain at least Level C in the other components during RP4. It has documented this requirement as a Safety Objective, and sought to identify key enablers to meeting these standards.

Other Safety Indicators

9.10 The IAA also monitors a range of Safety Performance Indicators (SPIs), including the rate of Runway Incursions and Separation Minima Infringements. For the defined SPIs, there are associated safety targets and alert thresholds to provide quantifiable measures for the maintenance and/or improvement of the level of safety of the air navigation services domain in Ireland. This methodology is developed to identify an Acceptable Level of Safety Performance (ALoSP) and is aligned with ICAO Doc 9859.

10. Environment KPA

10.1 The Environment KPA contains one KPI: Horizontal En Route flight efficiency of the actual trajectory (KEA). This indicator measures the additional distance actually flown relative to the great circle distance. Thus, it is intended to measure unnecessary additional distance flown in the FIR, which is wasteful from an environmental perspective.

10.2 Horizontal En Route flight efficiency is expressed as a percentage of additional distance flown relative to the great circle distance, so a relatively low percentage indicates relatively good performance and vice versa.

Union-Wide Targets

10.3 The revised RP3 Union-wide KEA targets have been consistently exceeded since 2021, as shown in Table 10.1. As such, the RP4 targets are less stringent than the revised RP3 targets but do become more ambitious in later years.

Table 10.1: RP3 Environment KPA Union-Wide Targets and Performance

Horizontal flight efficiency (KEA)	2020	2021	2022	2023	2024
RP3 Targets	2.53%	2.37%	2.37%	2.40%	2.40%
RP3 Performance	2.51%	2.59%	2.96%	2.99%	-

Source: EUROCONTROL

10.4 The Union-wide targets for RP4 are shown in Table 10.2.

Table 10.2: RP4 Environment KPA Union-Wide Targets

Horizontal flight efficiency (KEA)	2025	2026	2027	2028	2029
RP4 Targets	2.80%	2.75%	2.71%	2.68%	2.66%

Source: Commission Implementing Decision (EU) 2024/1688

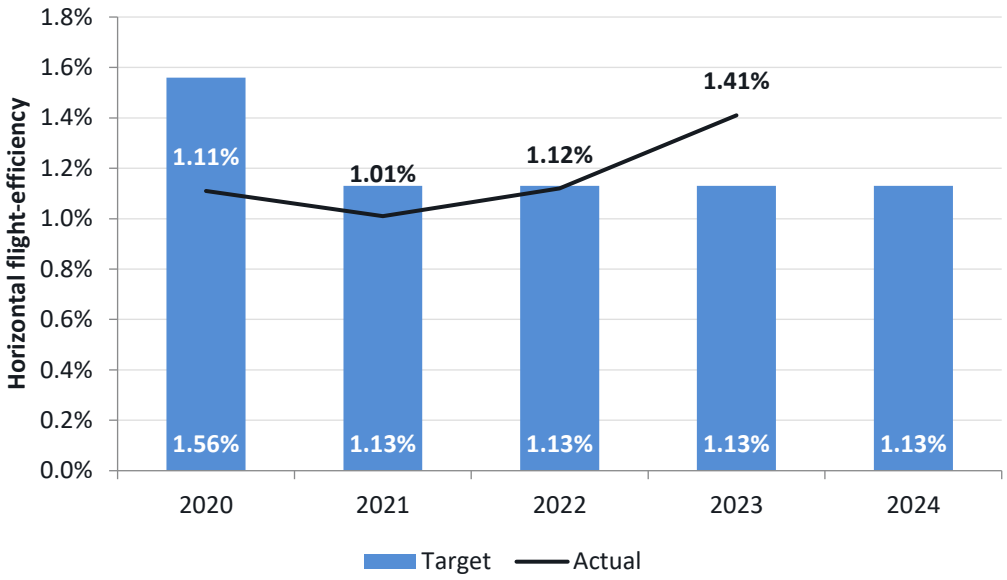
Local Targets

10.5 National KEA reference values are calculated by the Network Manager, as the contribution required from each ANSP in order to meet the KEA target at a Union-wide level.[50] At local level, the RP3 KEA targets and annual performance are presented in Figure 10.1, with the monthly KEA performance from 2022 to present shown in Figure 10.2.

10.6 The KEA performance of AirNav Ireland is significantly better than the Union-wide average, with targets that are consequently more challenging than average. Free Route Airspace (FRA) was introduced in Ireland in 2009, which has been a significant driver of the relatively strong KEA performance to date.

[50] For details on the methodology, see: Performance Indicator - Horizontal Flight Efficiency | Aviation Intelligence Unit Portal (ansperformance.eu)

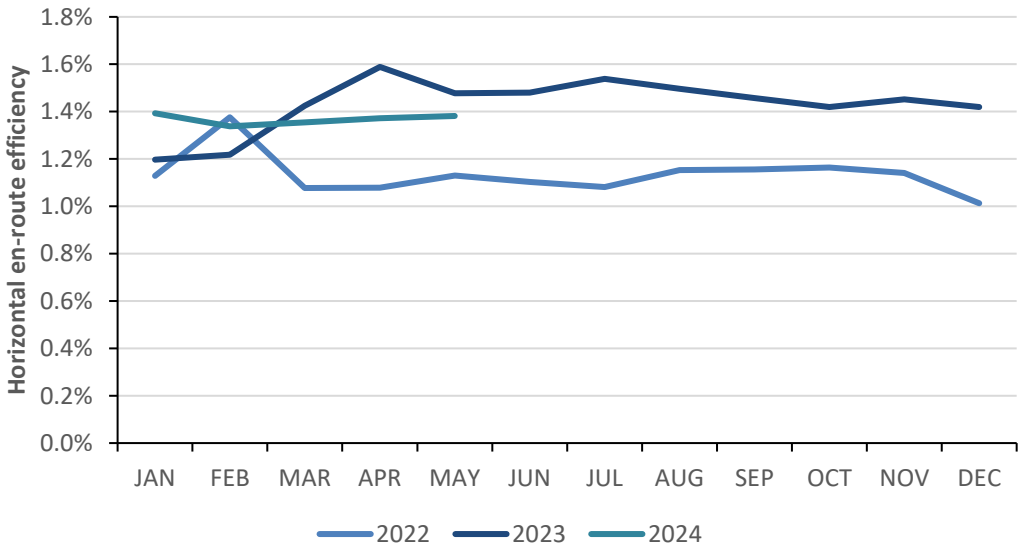
Figure 10.1: Horizontal Flight-Efficiency (KEA) Performance vs. Target



Source: RP3 Revised Performance Plan and monitoring reports

10.7 While AirNav Ireland remains one of Europe's best performers in terms of the KEA, the target was missed by 0.31 percentage points in 2023. AirNav Ireland assesses that this was largely due to factors outside of the control of AirNav Ireland, and requests from the Network Manager to avoid offering short or direct routings, to enhance network performance. In that context, we have further reviewed the KEA profile across the years 2022, 2023, and 2024 to date, as shown in the figure below.

Figure 10.2: AirNav Ireland KEA Performance Profiles



Source: Eurocontrol

10.8 We note that, prior to the UK LD1/West airspace change, which relates to the introduction of FRA in UK airspace, the KEA in 2023 was at its lowest level in

the year at approximately 1.2% and broadly consistent with 2022. A sharp increase was observed from 23rd March 2023, the same day as the UK airspace change was operationalised. KEA inefficiency peaked in April at 1.6% and remained elevated for the remainder of the year, although started to trend downwards in later months.

10.9 As shown above, the KEA performance has normalised somewhat in the opening months of 2024, although remains above 2022 levels. This suggests that the introduction of FRA in Western UK airspace continues to impose challenges in meeting KEA targets and was indeed likely a key factor behind performance exceeding target levels in 2023.

10.10 The RP4 reference values for Ireland are shown in Table 10.3. These are less challenging than those of RP3 but remain significantly below the Union-wide targets. Thus, AirNav Ireland is being asked to contribute to the EU-wide KEA performance to a relatively greater extent than most other ANSPs.[51]

Table 10.3: AirNav Ireland RP4 Reference Values

Horizontal flight efficiency (KEA)	2025	2026	2027	2028	2029
RP4 Reference Values	1.42%	1.40%	1.38%	1.36%	1.34%

Source: Eurocontrol

10.11 Sustainably reducing the environmental impact of aviation is a key goal for Ireland, as it is across the EU. Challenging targets will drive a focus for both AirNav Ireland and the IAA to continuously assess and monitor performance. From that perspective, it is preferable to have a target which, while challenging, seeks to drive performance improvements. In that regard, the reference values appear to provide an appropriate balance between achievability/realism, and ambition. We note that AirNav Ireland continues to work with UK NATS to identify any potential improvements which may mitigate the impact of the 2023 UK airspace change on the KEA in Irish airspace.

10.12 We therefore propose to implement the national reference values as AirNav Ireland's targets for RP4. Having regard to the above factors, we do not propose to implement a financial incentive scheme in relation to the KEA, as set out in Section 14.

Measures to Achieve the Targets

10.13 A report commissioned by the PRB into the indicators used to monitor performance found the KEA to be an imperfect proxy for environmental performance, as it captures many elements which are outside the control of the ANSP, particularly where full FRA has already been implemented. Despite these flaws, no changes to the KEA metric will be in place for RP4, and it will remain the sole KPI for target setting in the Environment KPA.

10.14 Notwithstanding the imperfect nature of the KEA as a performance monitoring

[51] The KEA reference values of other countries can be seen here: Update: Publication of supporting materials for RP4 - European Commission (europa.eu)

metric and the challenges it presents, AirNav Ireland considers that a number of planned projects or other factors will have a positive impact on overall environmental performance:

- Noise Abatement Departure Procedure (NADP-2 at Dublin Airport, which is intended to provide noise reduction for noise-sensitive areas more distant from the runway threshold, will improve both noise and fuel consumption performance during RP4.

- Common Project 1 (CP1) related projects will continue to help support AirNav Ireland to improve KEA performance. Of the total CO_2 emission savings as a result of CP1, 80% originate from AF3 functionalities.[52] In addition, reductions in taxi-out times will further support reductions in CO_2 output.

- Compared with RP3, challenges in achieving the target as a result of helping other ANSPs deal with bottlenecks in service may have abated. Deeper implementation of FRA across both the UK and Ireland, and implementing measures by other ANPS, will reduce the negative impact on AirNav Ireland's environmental performance, although, as above, the full benefits of such implementation have not yet been realised.

10.15 In PRB guidance documentation, analysis shows a clear interdependency between the capacity and environmental KPA.[53] ATFM delays have been shown to have a negative impact on the KEA, with a one-minute increase of average En Route ATFM delay per flight found to cause an increase of 0.14 percentage points to horizontal flight efficiency. In this regard, our forecast increase in ATCOs over RP4 and the other assumptions consistent with ensuring that our capacity targets can be met should have a positive impact on ensuring that, to the extent that any further deterioration in AirNav Ireland's capacity performance would have a negative impact on the KEA, this outcome will be avoided.

Environment PIs, Indicators, and Related Topics

10.16 While the Environment KPA contains only one KPI (Horizontal En Route flight efficiency of the actual trajectory), a number of additional Performance Indicators (PIs) are also monitored, including:

- Horizontal En Route flight efficiency of the last filed flight plan (KEP)

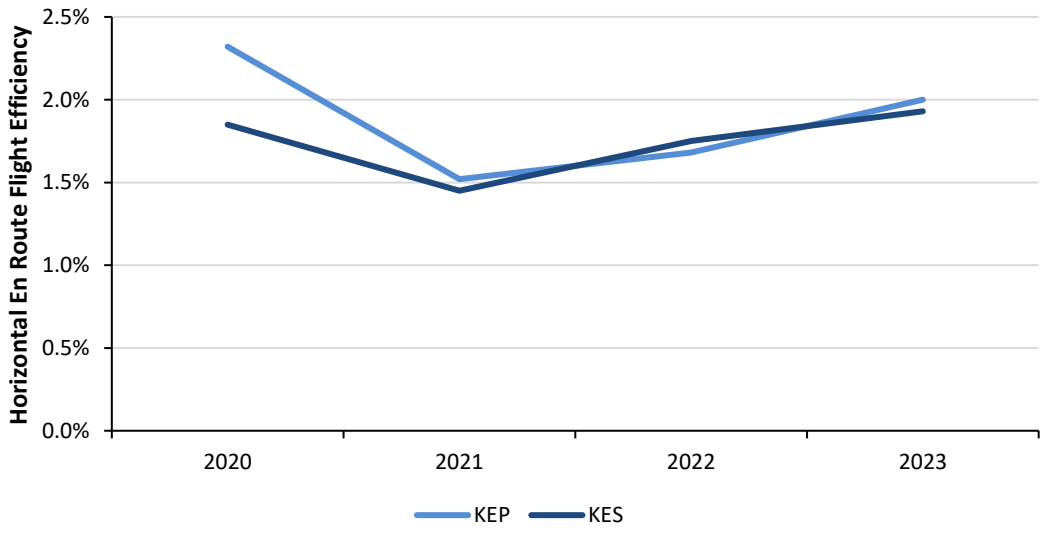
- Horizontal En Route flight efficiency of the shortest constrained route (KES)

- Additional taxi-out time (ATXOT)[54]

[52] Flexible airspace management and FRA.
[53] Aviation – EU-wide performance targets for 2025-2029 (Single European Sky) (europa.eu)
[54] ATXOT is a proxy for the average departure runway queuing time on the outbound traffic flow during congestion at airports.

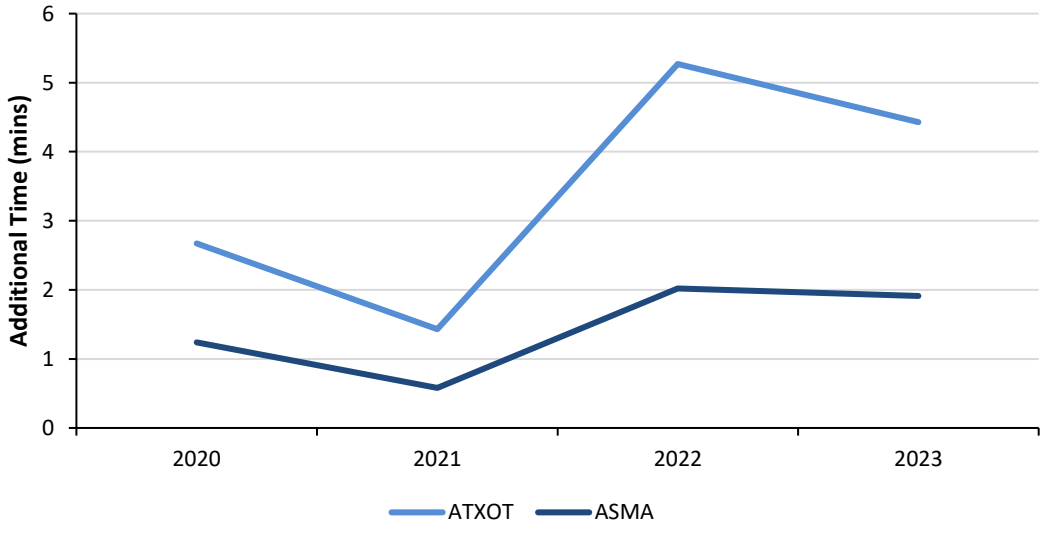
- Additional time in terminal airspace (ASMA)[55]

Figure 10.3: KEP and KES RP3 Performance



Source: IAA Monitoring Reports

Figure 10.4: ATXOT and ASMA RP3 Performance



Source: IAA Monitoring Reports

10.17 All of the PIs improved between 2020 and 2021, likely as a result of reduced traffic volumes as a result of the pandemic. However, performance deteriorated in 2022 as air traffic started to normalise towards pre-pandemic levels.

10.18 Dublin Airport's new runway (28R/10L) became operational in August 2022, with a phased increase to full operational hours by mid-2023. This has likely contributed to improving the additional taxi-out time PI between 2022 and 2023

[55] Additional ASMA time provides an approximate measure of the average inbound queuing time on the inbound traffic flow during times that the airport is congested.

as well as the additional time in terminal airspace, notwithstanding the significant increase in traffic volumes. Conversely, and in line with the deterioration in the KEA observed in 2023, the KEP and KES have continued to trend upwards since 2021. This increase was likely related to the same factors which impacted the KEA, as discussed above. In relation to the KES, a low-level airspace review is under way, results of which will be available in Q4 2024, while the KEP should improve in line with the KEA pending continued cooperation with UK NATS.

10.19 The PRB has suggested the introduction of a number of new environmental performance indicators for RP4 to extend the coverage of the monitoring of air traffic management performance towards a gate-to-gate approach. These indicators are:

- Estimated gate-to-gate fuel burn
- En Route vertical flight efficiency (Union-wide and local levels)
- Continuous climb operations (local level)
- Additional taxi-in time (local level)

10.20 The scope of the estimated gate-to-gate fuel burn indicator is to measure total fuel burn and CO2 emissions of all phases of flight, from taxi-out at the departure airport to taxi-in at the arrival airport. This indicator is currently calculated for flights operated wholly within the Network Management area, does not consider flights overflying the airspace and it does not require actual fuel burn data from airlines as it is based on Network Manager modelling.

10.21 Monitoring the performance of En Route vertical flight efficiency has been proposed for inclusion over RP4 as at present, vertical flight efficiency is not addressed by the performance scheme, with this area of environmental flight efficiency estimated to represent 16% of excess CO2 emissions.[56] While the Network Manager is currently calculating and monitoring an indicator on vertical flight efficiency[57], the PRB suggests refining this indicator to consider the impact of altitude restrictions on vertical flight efficiency and that all flights above their planned flight level should be assumed to be optimal. The indicator in its current form is currently monitored by the Network Manager, and as such, no additional data collection will be required by the ANSP.

10.22 The continuous climb operations indicator defines the share of departures applying continuous climb operations. The PRB propose the inclusion of this indicator to extend the scope of performance monitoring to more phases of the gate-to-gate flight.

10.23 The additional taxi-in time indicator defines the average excess time spent during the taxi-in phase, during times that the apron and stands are congested. This indicator is proposed for inclusion to extend the scope of performance

[56] EAER | EASA Eco (europa.eu)
[57] Network Performance Plan 2020-2024 | EUROCONTROL

monitoring to more phases of the flight.

10.24 The European Union has ambitious climate targets, with the European Commission adopting a set of proposals to make the EU's climate, energy, transport and taxation policies fit for reducing net greenhouse gas emissions by at least 55% by 2030.[58] Furthermore, in order to achieve climate-neutrality by 2050, ambitious changes and a 90% reduction in transport-related greenhouse gas emissions is required.[59] As discussed earlier, a number of projects and planned operational resilience should provide support to achieve environmental performance improvements over the period.

[58] The European Green Deal - European Commission (europa.eu)
[59] Transport and the Green Deal - European Commission (europa.eu)

11. Capacity KPA

11.1 The capacity KPA relates to the availability of sufficient air traffic control capacity to avoid generating an excessive level of Air Traffic Flow Management (ATFM) delay. There are two KPIs within the capacity KPA, one relating to En Route capacity and one relating to Terminal capacity:

- The average En Route AFTM delay minutes per flight attributable to air navigation services.

- The average arrival ATFM delay minutes per flight attributable to Terminal and airport air navigation services.

11.2 These targets are both expressed as delay minutes per flight, so, similar to the KEA, a relatively low number indicates relatively better performance and vice versa. There are incentive schemes associated with both KPIs, which are discussed in Section 14.

En Route Capacity

11.3 Conceptually, to provide scalable capacity, the airspace is divided into sectors, which can be divided or combined (up to certain limits) depending on the level of demand and/or the availability of sufficient and appropriately rated ATCOs. Each sector requires a specific number of ATCOs to provide the air traffic service. Each of these sectors also has a maximum number of aircraft that can be safely accommodated in a defined period. By assessing the number of aircraft per sector per time period, and the number of available sectors, the available capacity can be determined.

11.4 Where this capacity is exceeded, ATFM delay minutes will be generated. There are, of course, a number of additional elements that are factored into this calculation, but the basics are as stated. If capacity abates at different times of the day, sectors can be re-combined to reduce the number of ATCOs required. Further details on this are set out in the CEPA draft report.

Union-Wide Targets

11.5 The Union-wide RP3 En Route capacity targets and performance to-date are shown in Table 11.1 below. While targets were met for 2020 and 2021, Union-wide En Route ATFM delay performance has significantly deteriorated since.

Table 11.1: RP3 Union-Wide En Route Capacity Targets and Performance

AFTM delay mins. Per flight	2020	2021	2022	2023	2024
RP3 Targets	0.90	0.35	0.50	0.50	0.50
RP3 Performance	0.36	0.32	1.69	1.84	-

Source: EUROCONTROL

11.6 The Union-wide En Route capacity targets for RP4 are in line with the RP3 targets by the end of the Reference Period, but more lenient in the early years. These targets are shown below.

Table 11.2: Union-Wide En Route Capacity Targets

AFTM delay mins. Per flight	2025	2026	2027	2028	2029
RP4 Targets	0.90	0.70	0.60	0.50	0.50

Source: Commission Implementing Decision (EU) 2024/1688

Local Targets

11.7 As with the Environment KPA, national reference values are calculated by the Network Manager in order to collectively meet the Union-wide targets. The reference values relating to Ireland are lower than the Union-wide targets. The table below shows the reference values provided for Ireland.

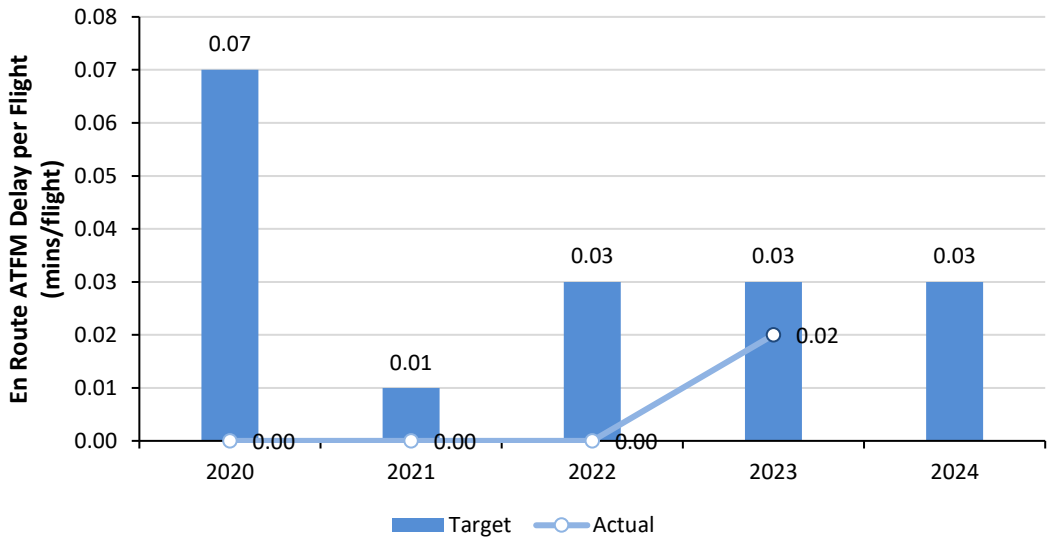
Table 11.3: En Route ATFM Delay Reference Values for Irish Airspace

AFTM delay mins. Per flight	2025	2026	2027	2028	2029
RP4 Targets	0.08	0.06	0.05	0.03	0.03

Source: EUROCONTROL

11.8 Over the RP3 period, AirNav Ireland's capacity performance has consistently been one of the strongest in the Union, averaging 0.01 mins/flight of ATFM delay. AirNav Ireland met all En Route service demand between 2020 and 2022 despite ATCO headcount running below the IAA's RP3 forecast for 2022. However, while still meeting the ATFM delay target, performance deteriorated markedly in 2023, with En Route ATFM delay reaching 0.02 min/flight.

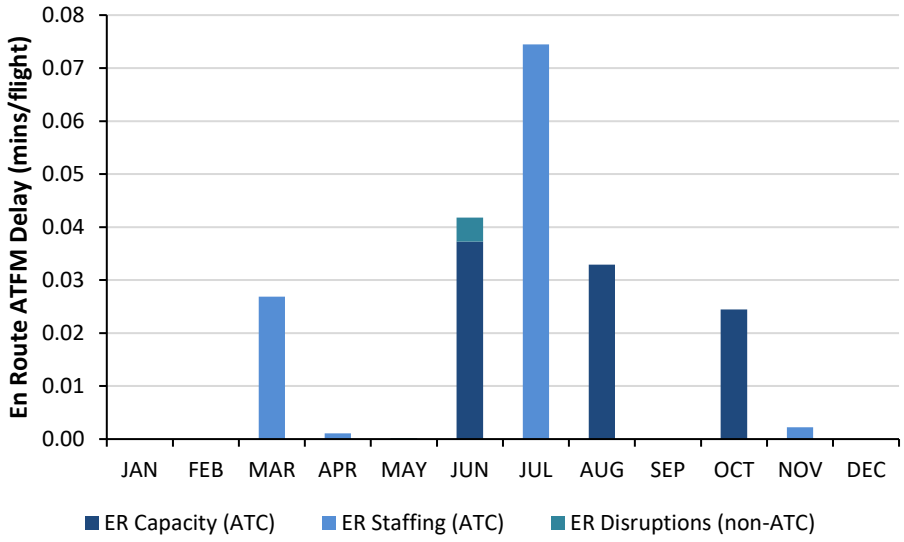
Figure 11.1: Actual and Target RP3 ATFM Delay



Source: Ireland RP3 Performance Plan and Network Manager

11.9 Further, as shown below, almost all of this delay was ANSP attributable. With ATCO headcount again running below forecast for 2023, performance relied on overtime and a high level of ATCO utilisation, as detailed in Section 4 above and in the draft CEPA/Think report.

Figure 11.2: En Route ATFM Delay, 2023



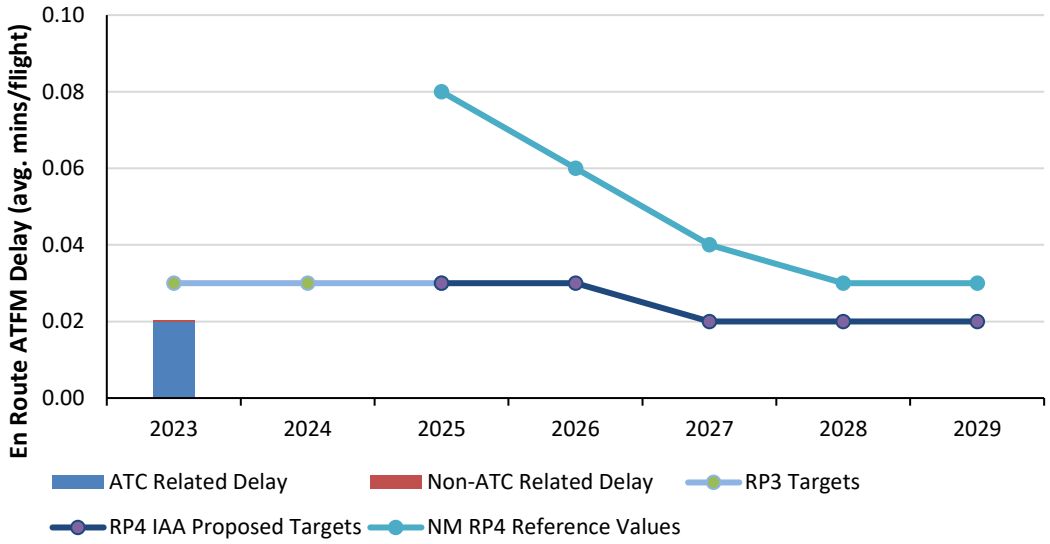
Source: EUROCONTROL

11.10 Notwithstanding the above, we note that the suggested reference values would allow for a continued and significant deterioration in performance relative to the current target, in circumstances where AirNav Ireland has still met the current target. In that context, we do not consider it reasonable to set a target for RP4 which is below the current RP3 target.

11.11 We propose to retain the current RP3 target (0.03 mins/flight) as the RP4 target for 2025 and 2026, before lowering the target to 0.02 mins/flight from 2027 onwards. This is with a view to setting an incrementally more ambitious target, to encourage improved performance relative to 2023, and generate an internal consistency by linking it to the year where the CEPA/Think analysis suggests that the current under resourcing in staffing levels can be fully addressed, with additional resilience added to the rosters to reduce utilisation to sustainable levels. A comparison of the IAA's proposed En Route ATFM delay targets compared to the local reference values, and those of RP3, is shown below.

11.12 We have taken account of these more challenging capacity targets in the cost forecasts, as described above, with the underlying assumptions designed to be consistent with achieving these targets notwithstanding the forecast increase in traffic.

Figure 11.3: En Route ATFM Delay and Targets for Ireland



Source: Network Manager, EUROCONTROL

11.13 The proposed targets are shown in the table below.

Table 11.4: IAA Proposed En Route ATFM Delay Targets

AFTM delay mins. Per flight	2025	2026	2027	2028	2029
RP4 Targets	0.03	0.03	0.02	0.02	0.02

Source: IAA

Terminal Capacity

11.14 Similar to an En Route ACC, if arriving traffic demand at an airport is anticipated to exceed the available capacity, the Network Manager will assign ATFM delay to traffic at the departure airports. The resulting ATFM delay minutes are calculated as the difference between the estimated take-off time from the filed flight plan compared to the calculated take-off time allocated by the central unit of ATFM.

Local Targets

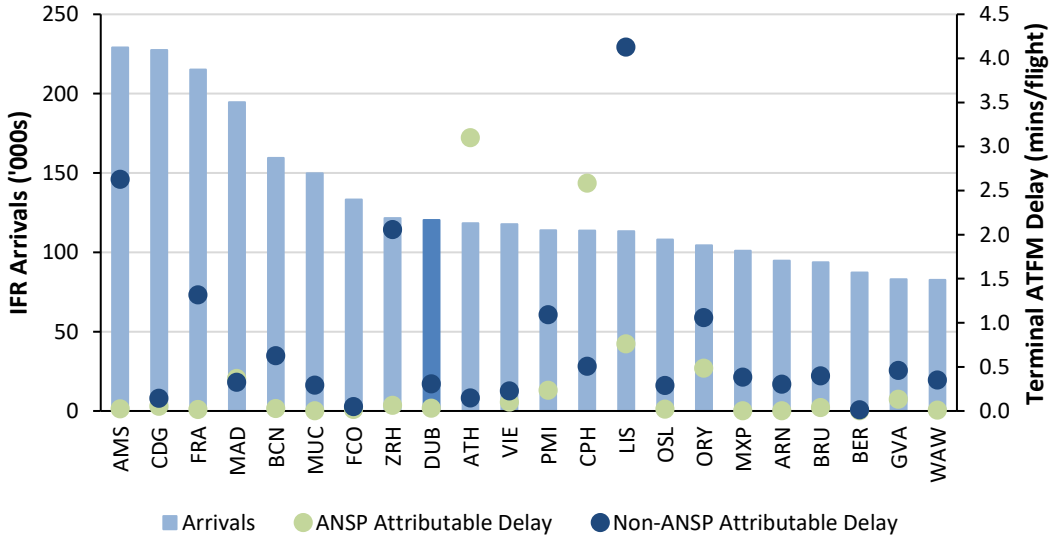
11.15 There are no Union-wide targets for terminal capacity, so these targets are to be set at a local level by the NSA. Dublin Airport is the main Irish airport which generates Terminal ATFM delay minutes, although over RP3 some spikes of delay were also generated at Shannon Airport. AirNav Ireland met the Terminal ATFM arrival delay targets between 2020 and 2022. The 2023 target, however, was missed by 0.10 mins/flight, but most of this delay was non-ANSP attributable, relating to weather and aerodrome capacity.

11.16 In considering whether the targets set in RP3 remain reasonable for RP4, we have also assessed ATFM delay performance at Dublin Airport compared with other SES airports with more than 80k arrivals per annum, as shown in Figure

11.4. Under the SES performance scheme, the causes of delay which are deemed to be ANSP-attributable are as follows (with Network Manager codes):

- ATC capacity (C): where demand exceeds capacity
- ATC routing (R): where demand and capacity are not adequately allocated
- ATC staffing (S): where delays are due to staff shortages
- ATC equipment (T): where delays are due to the availability or quality of equipment
- Military (M): where delays are due to route availability due to military activity
- Special event (P): where delays are due to a one-off planned capacity shortage.

Figure 11.4: Terminal ATFM Delay and IFR Arrivals (airports >80k arrivals), 2023



Source: EUROCONTROL

11.17 Although Terminal ATFM delay exceeded the target in 2023, we note that Dublin Airport still performed relatively strongly. The above figure shows that despite receiving the 9th highest number of arrivals in 2023, Terminal ATFM at Dublin Airport, which generates most delay in Ireland (Shannon accounted for just 2,597 of the total 43,164 Terminal delay minutes while Cork accounted for none), had relatively low Terminal delay compared with those experiencing similar levels of arrivals. In addition, and as noted above, very little of this delay was ANSP attributable.

11.18 We note that there is therefore relatively little scope to further lower this target. Overall, we propose to maintain a national target of 0.2 mins/flight for all years of RP4. This target is further disaggregated by airport below.

Table 11.5: IAA Proposed Terminal ATFM Delay Targets

AFTM delay mins. Per flight	2025	2026	2027	2028	2029
National	0.2	0.2	0.2	0.2	0.2
EIDW – Dublin	0.25	0.25	0.25	0.25	0.25
EICK – Cork	0.0	0.0	0.0	0.0	0.0
EINN – Shannon	0.0	0.0	0.0	0.0	0.0

Source: IAA

11.19 We propose, however, to adjust the parameters of the Terminal capacity incentive scheme to make it more effectively targeted towards CRSTMP delay, while modulating downwards the pivot values, as described in Section 14.

Compliance Measures and Monitoring

11.20 In its Business Plan, AirNav Ireland has outlined a number of capacity improvement measures to address overutilisation of ATCOs and a Capex underspend in recent years. As set out above, this is supported by our forecasting assumptions showing, among other things, ATCO headcount increasing, a larger number of ATM Specialists to assist with Capex delivery, and more Station Managers as a fatigue management measure.

11.21 The IAA will continue to monitor and report on the implementation of these initiatives and will work to ensure sufficient measures are taken to comply with the performance targets.

12. Cost Efficiency KPA, Unit Rate Forecasts, and Financeability

12.1 The cost efficiency KPA includes one Union-Wide KPI, which is the year-on-year trend in the real determined unit cost (DUC) for En Route air navigation services from the 2024 baseline through to the end of RP4.[60] The DUC for a given year is the total determined costs divided by the forecast service units.

12.2 At a Member State level, the cost efficiency KPI includes two KPIs, the DUC for En Route services and the DUC for Terminal services. To assess the draft Performance Plan for consistency with the Union-wide targets, as per Annex IV of the 2019 Regulation, the En Route DUC is assessed with reference to:

- The Union-wide target trend, which for RP4 is to be assessed as the Compound Annual Growth Rate (CAGR) from 2024 to 2029.
- The long-term target trend, which for RP4 is to be assessed as the CAGR from 2019 to 2029.
- The baseline DUC relative to each ANSP's comparator group (which for Ireland includes those of Cyprus, Malta, and Portugal).

12.3 It should then be further assessed with reference to whether any deviations from the Union-wide short-term trend and/or the long-term target trend can be justified as solely relating to measures to achieve the local capacity targets, or relating to upfront costs which will provide longer-term benefits for airspace users (restructuring costs). In addition, where there are changes in the nature of the determined costs and/or cost allocation, or in relation to service units, between any of the years 2019, 2024, and 2029, baseline adjustments can be applied to the 2019 and/or 2024 baselines so that they are directly comparable to 2029.

12.4 The short-term Terminal DUC trend (2024 to 2029) is assessed for reasonability with reference to the En Route DUC trend, and the DUC at similar airports.

Union Wide and Local Targets

12.5 The Union wide target trend for En Route services for 2024 to 2029 is -1.2% per year, while the long-term trend from 2019 to 2029 is -1% per year. In assessing how our draft estimates compare to these short and long term trends, we have made the following baseline adjustments:

- A correction to the MET ASD actual costs for 2019, the same adjustment which was made for the RP3 Performance Plan.
- An adjustment to the 2019 service units to reflect the distance component being changed from planned to actual flown distances, which, again, is the same adjustment which was made in the RP3 Performance Plan.
- An adjustment to both the 2019 and 2024 cost baselines, to reflect the return of the FMP/AMC positions and the associated change in cost

[60] While termed the 'real' DUC, the DUC is calculated with reference to all costs in the Performance Plan, including those which are always specified in nominal terms, namely all capital costs, the NSA/State costs, and Eurocontrol costs.

allocation, as described in Section 4.

12.6 Having made these adjustments, we observe that the short- and long-term DUC trend is deviating from the target trends, being +2.2% and +0.7%, respectively. Our initial assessment is that this variance cannot be ascribed to any restructuring costs, but it can be ascribed to measures necessary to meet the local capacity targets which, as described above, we propose to set at a level below the Network Manager reference values for each year of RP4. Given the overriding nature of the obligation to maintain safety performance, there are a range of such measures within our draft determined cost forecasts, particularly:

- The increase in ATCOs to over 350 by 2028, which is generating additional staff costs associated with those ATCOs, as well as other Opex such as training costs, and additional core costs.
- Major investment in the ATM systems as part of the COOPANS alliance, both throughout RP4, and, in 2029, the new TopSky ATC One system.
- Increases in the engineer resourcing levels necessary to, among other things, facilitate the delivery of this programme of investment.

12.7 The variance is primarily caused by the assumed step increases in AirNav Ireland's ATCO and engineer resourcing levels. As set out above, while we consider that these requirements have been overstated somewhat by AirNav Ireland, our draft assessment does align with the position that there ought to be significant increases in staffing levels in these areas.

12.8 This result differs from RP3, where we set a local target which was more stringent by 1.35% compared to the Union-wide target trend. Should this remain our position in the Final Decision, meaning that the DUC trend remains above the target trends, we expect to quantify and lay out each such measure with reference to our Final Decision on each cost line, to allow us to conclude on whether the draft Performance Plan is consistent with the Union-wide targets in that it either aligns with the target trend, or any variance from that trend is solely attributable to measures to achieve the capacity targets.

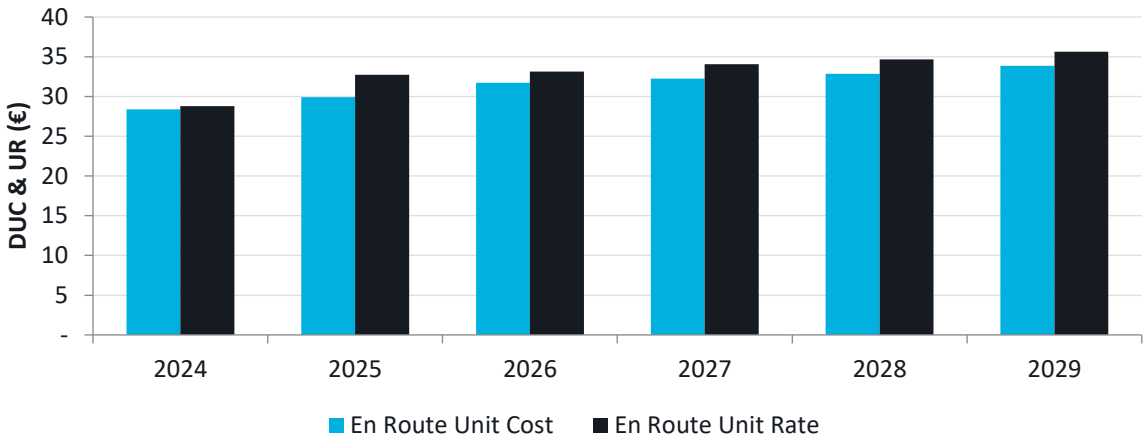
12.9 It should be noted that, based solely on the final Business Plan submissions from MET ASD and AirNav Ireland, before any adjustments by the IAA, we estimate that the short-term trend would be +4.2%, and the long-term trend would be +1.7%.

12.10 The DUC for Terminal services shows a similar short-term trend result as for En Route, with a CAGR between 2024 and 2029 of +2.4%. The reasons for the proposed increase in real unit costs are similar to those described above for En Route. Again, based solely on the final Business Plan submissions from MET ASD and AirNav Ireland, before any adjustments by the IAA, we estimate that the short-term trend would be +4.6%.

Forecast Unit Rates

12.11 Figure 12.1 shows the forecast En Route unit cost and unit rates, in nominal terms, with reference to 2024 actual unit rate and forecast unit cost.

Figure 12.1: Forecast En Route Unit Costs and Unit Rates



Source: IAA. Nominal prices.

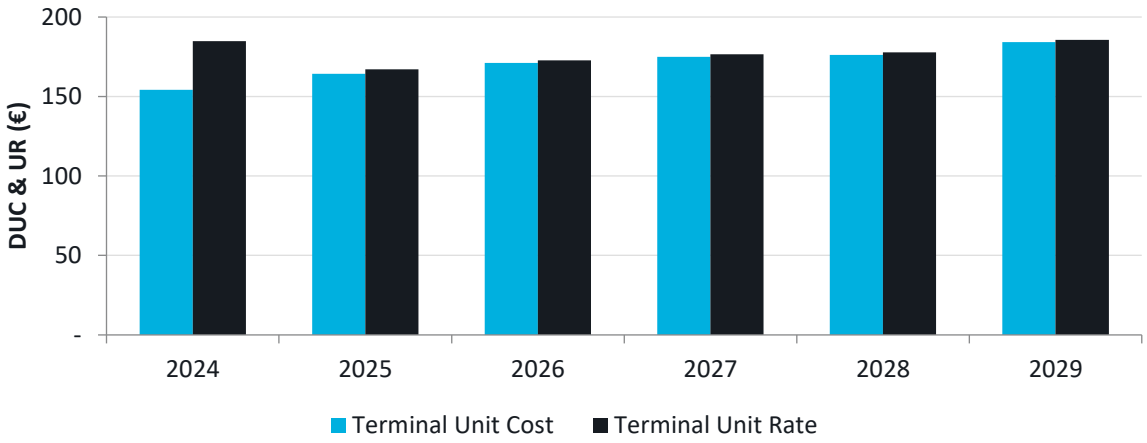
12.12 Based on our draft determined cost forecasts, and the application of adjustments to the unit rates to the extent that these are currently ascertainable, we forecast that the En Route unit rate will increase in nominal terms from €28.78 in 2024 to €32.75 next year, and then to €35.64 by 2029. One driver of the upward trajectory is the increasing unit cost, as described above. The unit rate is also consistently higher than the unit cost as a result of the recovery of unrecovered revenues relating to 2020 and 2021, as decided at EU level during RP3, which equates to €10m per year across RP4. In 2025, there is a further upward inflation adjustment in respect of 2023 of €10.5m, as decided in RP3.

12.13 Conversely, in 2025 and 2026, the unit rate adjustments also include the return of capital costs associated with all unspent Capex over RP3. This figure is final for 2020 to 2023, all of which has been included in the adjustments for 2025. This has the effect of moderating the step increase in the unit rate between 2024 and 2025. The figure has also been estimated for 2024, and this estimate has been provisionally included in the adjustments for 2026.

12.14 We note that, based on the final Business Plan submissions from MET ASD and AirNav Ireland before any adjustments have been made by the IAA, the En Route unit rate by 2029 would be approximately €40, 12% higher than our estimate.

12.15 Figure 12.2 shows the equivalent chart for the Terminal charging zone.

Figure 12.2: Forecast Terminal Unit Costs and Unit Rates



Source: IAA. Nominal prices.

12.16 Again, based on the draft determined cost forecasts, and the proposed application of adjustments to the unit rates to the extent that these adjustments are currently ascertainable, we forecast that the Terminal unit rate will decrease in nominal terms from €184.90 in 2024 to €167.19 next year, and then slowly increase back to €185.73 by 2029. The unit cost trajectory is similar to En Route, however, in this case, the increased costs and the upward unit rate adjustments are more than offset by downward adjustments relating to traffic risk sharing, Other Revenues, and the return of capital costs associated with all unspent Capex over RP3.

12.17 These capital costs due for return are relatively much higher compared to the unit cost base for Terminal than for En Route. For that reason, frontloading their return would create a volatile profile whereby the unit rate would fall to €150 in 2025, before increasing sharply again from 2026 and beyond. To generate a more stable profile, as shown above, we propose that the return would be spread across RP4, rather than frontloaded as for En Route. This is reflected in the above unit rate forecasts. In that case, the unspent capital cost returns come close to offsetting the upward adjustment in relation to unrecovered revenues from 2020 and 2021, in each year of RP4, such that the unit rate closely reflects the unit cost.

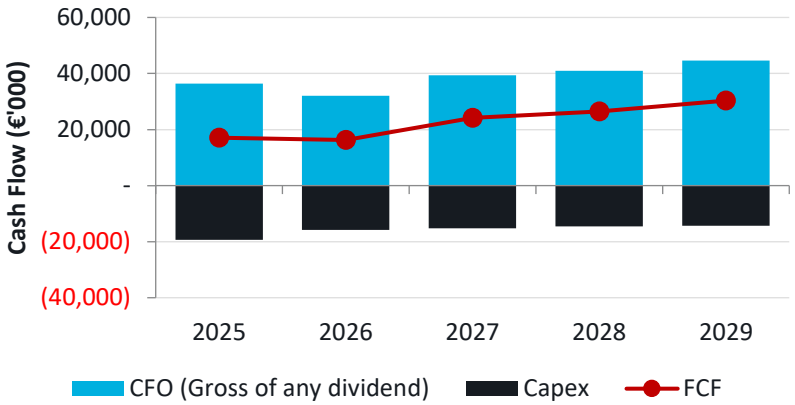
12.18 We note that, based on the final Business Plan submissions from MET ASD and AirNav Ireland before any adjustments by the IAA, the Terminal unit rate would be approximately €210 by 2029, 13.5% higher than our estimate.

Financeability and Stress Tests

12.19 We have conducted a financeability assessment of the AirNav Ireland regulated entity, and stress tested our proposals, in line with our usual approach to making a price control decision and as required for inclusion in the draft Performance Plan submission. Given that AirNav Ireland accrues future unit rate adjustments such that its profitability can be significantly different from its cash flow, we have not sought to forecast its profitability or to estimate a shadow credit rating, but focus on cash flows.

12.20 We note that AirNav Ireland will start RP4 with no debt and a positive cash balance. Figure 12.3 below then shows the base case forecast cash flows over RP4, where Capex, Opex, and En Route and Terminal revenues align with our Draft Decision assumptions, which includes our proposal that all unit rate adjustments are to be applied as per the 2019 Regulation.

Figure 12.3: Base Case Cash Flow Forecasts



Source: IAA Calculations. Nominal.

12.21 As shown above, in the base case, AirNav Ireland can comfortably fund forecast Capex from cash flow from operations within RP4 alone, or indeed could fund Capex at a significantly higher level than forecast. The positive cash flow from operations in excess of the capital cost allowances is primarily driven by the recovery of unrecovered revenues from 2020 and 2021, which equates to almost €12m per year.

12.22 When the base case is stress tested by a 10% overspend on all Opex, AirNav Ireland still generates approximately €22m, overall, in free cash flow across RP4. We have estimated cost forecasts which we consider to be achievable, while delivering a safe and high-quality service, but even if AirNav Ireland is unable to fully meet our cost efficiency targets, performance in the other KPAs does not need to be degraded.

12.23 Overall, it is clear that AirNav Ireland will have sufficient financial resources and resilience to deal with any reasonable downside scenario even without raising any debt, a lever which is open to it in any case. It should also be noted that, in the event of an extreme downside scenario, the 2019 Regulation allows for the Performance Plan to be reopened.

13. Interdependencies

13.1 An important element of the target-setting process for each of the KPAs is the consideration of the interdependencies between them, and therefore the extent to which there are potential trade-offs between the achievement of performance targets across different KPAs. More broadly, this reflects the proper approach to any price control decision, where the assumptions and targets should be collectively unbiased and internally consistent with each other.

13.2 Conceptually, there is likely to be a trade-off between cost efficiency and each of the other three KPAs, namely Capacity, Environment, and Safety. Improving performance in each of these areas may require additional resources to be deployed and additional costs to be incurred, which will increase costs and reduce cost-efficiency performance.

13.3 The trade-off between cost efficiency and the other three KPAs also implies that there are potential trade-offs between the Capacity, Environment, and Safety KPAs, because, if performance improvements are mutually exclusive, costs incurred in improving one KPA implies foregoing improving another. In practice, performance improvements in each KPA may not be fully mutually exclusive, though costs incurred in one area are likely to improve performance in one KPA more than others, which implies some level of trade-off.

13.4 Interdependencies and trade-offs can inform the target-setting process such that KPA targets are set at the optimum point which simultaneously maximises the combined performance across all KPAs. However, the extent to which this can be achieved in practice is limited by regulatory and other constraints. The remainder of this section discusses the interdependencies and trade-offs between the KPAs.

Issues paper and Responses

13.5 In the Issues Paper we set out our intention to develop a Performance Plan which is internally consistent with regard to the four KPAs, noting the interdependencies that exist between the KPAs. The emphasis on the need to recognise the interaction between safety and the other KPAs was common in the responses from both AirNav Ireland and the AirNav Ireland Staff Panel.

Safety and the other KPAs

13.6 While a trade-off between the Safety KPA and other KPAs exists, the importance of ensuring the required level of operational safety and safety management means that this interdependency should be reflected more as an input than a trade-off. In practice, this usually means including cost forecasting assumptions which are consistent with fully meeting the required levels of safety. For example, in the engineering staff forecasts, we include the 7 additional staff which we assessed to be required as a result of EU Regulation 2017/373, rather than assessing the costs and benefits of doing so.

13.7 Considering interdependencies with other KPAs, all necessary costs should be incurred to achieve the required level of safety performance, irrespective of

whether the funds and resources associated with these costs could yield greater improvements in performance in other KPAs (or adversely affect performance in other KPAs).

13.8 AirNav Ireland's Business Plan reiterates its focus on safety, stating that safety remains its 'ultimate priority'. It also stresses the need for sufficient funds to ensure safety, highlighting the interdependency between safety and cost-efficiency. As set out in Section 12, it is clear that AirNav Ireland will have sufficient funds to ensure safety, even if it were to be unable to fully meet the cost efficiency targets in doing so.

Capacity and Cost Efficiency

13.9 For an ANSP operating efficiently, providing additional capacity will incur additional costs. However, establishing a relationship between cost efficiency and capacity is not straightforward in practice as there are a number of dimensions to consider.

13.10 The relationship between cost efficiency (as measured by the DUC) and ANSP-attributable delay is partly lagged, with additional capacity being significantly linked to investment in infrastructure or training of additional ATCOs, both of which have lead times of several years (although some additional capacity can be provided in the short term through, for example, additional overtime). The level of traffic, particularly when significantly higher than forecast, is also an important driver of available capacity and delay.

13.11 In its Business Plan, AirNav Ireland has laid out what it sees as the critical features needed to provide sufficient capacity. This includes delivering sufficient ATCO resources (reduced reliance on overtime, demand from staff for a better work-life balance, allowances for job-sharing, statutory and annual leave, etc.), and delivering a Capex programme which will allow it to cope with forecast traffic growth.

13.12 Ideally, capacity targets should be set at the optimum point where the marginal cost associated with any additional reduction in delay exceeds the marginal economic benefits associated with any further delay reduction. This aligns with the PRB's economic cost of delay concept. An estimate of this optimum point is considered when setting union-wide capacity targets and Member State reference values.

13.13 We have taken this interdependency into account by, in particular, proposing capacity targets which we consider to be appropriately challenging but not premised on eliminating all ATFM delay, as the marginal cost of doing so is likely to exceed the benefit. Equally, we have sought to develop cost forecasting assumptions which are consistent with reversing the trend of increasing ATFM delay and delivering very low ATFM delay levels over RP4, in particular through significant investment in the ATM systems and in additional ATCO and engineering staff.

Capacity and Environment

13.14 As noted above, and by AirNav Ireland in its Business Plan, the PRB study on the interdependency between capacity and environment estimated that an increase of 1 minute of En Route ATFM delay per flight causes an increase of 0.14 percentage points in the KEA. Less capacity and more congested airspace imply that airspace users have less ability to use the most efficient flight routing and, conversely, more capacity implies more efficient flight paths can be achieved. Therefore, while performance in these KPAs appears to be interdependent, there does not appear to be an inherent trade-off.

13.15 AirNav Ireland similarly notes that by sufficiently increasing capacity, this will also contribute to positive performance in the Environment KPA, demonstrating the correlation between the two KPAs. From that perspective, and particularly given the relatively limited levers available to AirNav Ireland to further improve KEA performance directly, it appears that the primary trade-off is of an indirect nature with cost efficiency, through the capacity and cost efficiency trade-off described above.

14. Traffic Risk Sharing and Incentive Schemes

14.1 In this section, we outline our proposed approaches to the TRS, and to incentive schemes in relation to service quality.

Issues paper

14.2 In the Issues paper, we asked for the views on the following:

- Whether the default approach to the TRS under the 2019 Regulation, as implemented in RP3, remains appropriate for RP4.
- Whether the approach to the En Route and Terminal capacity financial incentive schemes remain appropriate for RP4.
- Whether a financial incentive scheme should be introduced for the KEA for RP4 and if so, what factors should we consider in introducing it.
- Whether there are alternative environmental indicators relevant to AirNav Ireland's environment (or capacity) performance which might be suitable for local target setting for RP4. If so, which indicators, and on the basis of what methodology? Should a financial incentive scheme be included in relation to any such targets?

Traffic Risk Sharing (TRS)

14.3 The TRS applies to AirNav Ireland's determined costs, based on the difference between the Performance Plan forecast service units and actual service units. The default position is that risk associated with service unit variance of +/-2% relative to the Performance Plan forecast is fully allocated to the ANSP, variance between 2% and 10% in service units is allocated 30% to the ANSP and 70% to airspace users, and any variance above 10% is fully allocated to airspace users.

14.4 The maximum traffic risk exposure of the ANSP is therefore 4.4% of determined costs (2%+(30%*8%)). That risk materialises when service units vary by 10% or more from the forecast. The adjustments are made to the unit rate in year n+2.

Table 14.1: Default allocation of traffic risk

SU Variance	Implications on unit rate
+/-2%	No adjustments
+/-2% to +/-10%	70% of the difference passed onto airspace users
+/-10%	All of the difference is passed onto airspace users.

Source: 2019 Regulation

14.5 The 2019 Regulation allows for the NSA to alter the parameters in order to increase (but not decrease) the ANSP's risk exposure above 4.4%. In the Issues Paper, we said that we do not see any compelling reason to change the TRS parameters.

14.6 In their responses to the Issues Paper, Aer Lingus, AirNav Ireland, the AirNav Ireland Staff Panel, and Ryanair were all broadly in agreement with the proposed approach to the TRS. Ryanair remarked that a traffic downturn outside of the airlines control (such as the Covid-19 pandemic) should be covered by the State and not airlines. Our draft decision is to retain the TRS parameters at the default level as in RP3.

Overview of Incentive Schemes and Parameters

14.7 The incentive scheme parameters are set out within the 2019 Regulation, supplemented by the supporting material on incentives, which provides additional guidance on how parameters should be set.[61] The parameters applicable to capacity incentive schemes are described below.

14.8 The 2019 Regulation sets out that performance targets should be subject to incentives that encourage better performance from the ANSP. Incentive schemes should be effective, and parameters should be set in a non-discriminatory and transparent manner.

14.9 The Safety KPA is not to be subject to any incentives due to its overriding nature, while incentives are inherent in the Cost Efficiency KPA through the allocation of cost and traffic risk. The possibility of incentive schemes therefore arises in relation to the Capacity and Environment KPAs. The 2019 Regulation requires Performance Plans to include incentives in the Capacity KPA. No financial incentive currently exists for the Environment KPA, although the 2019 Regulation permits such a scheme, should the NSA consider it appropriate.

Pivot Value

14.10 The NSA can decide to set pivot values which are either 'Fixed', based on national targets, or 'Modulated' with reference to either significant changes in the level of traffic, or limited to delay attributable to the ANSP, based on the applicable delay codes (C,R,S,T,M,P delay codes are considered to be ANSP attributable).[62]

14.11 The option to modulate the pivot value based on significant changes in traffic, relative to forecast levels, is based on the assumption that there is a relationship between the level of traffic and delay, and that ANSPs may be unfairly penalised for delays if traffic grows significantly (and vice versa for bonuses).

14.12 Modulating the pivot value based on traffic would require a systematic approach, including an elasticity relationship between traffic and delay, to be settled upon. Should a significant unforeseen change in traffic arise, any changes to the pivot value would need to be tied in to changes to delay targets and refer to the most recent reference values in the Network Operations Plan (NOP). Any such modulation is also further complicated by the need to take account of the risk allocation within the Performance Plan and the assumptions across the building blocks. In particular, the TRS is intended to provide

[61] bad85a80-0b38-411b-a76c-e7e583c6012d_en (europa.eu)
[62] Delay codes are published here: https://ansperformance.eu/definition/atfm-delay-codes/

additional remuneration to cover costs of servicing the additional traffic, while cost forecasts should be based on an assumption of maintaining a degree of resilience to such operational challenges or headwinds. It does not follow that an increase in flight traffic should necessarily, or at all, lead to an increase in average delay per flight, in the case of an efficient and effective service provider, which should be able to scale its capacity provision to a certain extent.

14.13 The option to modulate the pivot value based on ANSP-attributable delay is based on the rationale that ANSPs should only be incentivised in respect of delay which is within their control. This is reasonable, and reflects the IAA's approach in other similar contexts, such as when setting service quality targets in relation to Dublin Airport. However, it should be noted that while the pivot value can be modulated based on ANSP-attributable delay, we understand that the other incentive scheme parameters (e.g. the threshold and deadband) would still be based on total delay.

Threshold

14.14 The threshold around the pivot value corresponds to the values at and beyond which the maximum penalty or bonus payments are paid.

14.15 As set out in Article 9(4) of the 2019 the Regulation, the En Route capacity incentive scheme threshold is based on "*the variation of the reference values as a result of the seasonal updates of the Network Operations Plan … in comparison to the reference values from the latest version of the Network Operations Plan available at the time of drawing up the performance plan*".

Deadband

14.16 The deadband around the pivot value is the point at which the minimum bonus and/or penalty payments become payable, with bonus and/or penalty payments increasing up to the maximum level at the threshold value. For example, if the Fixed pivot value is 0.02 minutes per flight, and the deadband is 0.01, the minimum penalty payment begins to become payable once delay exceeds 0.03 minutes per flight. The deadband can also be set at the level of the threshold value, so that the maximum and minimum bonus and penalty payments are the same.

14.17 Unlike the threshold and pivot values, the 2019 Regulation does not stipulate what the deadband value should be, nor contain guidance on how it should be modulated from a default value, except for the fact that the deadband must be symmetrical around the pivot value. The deadband concept appears to be based on the position that where the pivot value/target delay is not met, the penalty (or bonus) should not begin to accrue immediately, but only at some further point beyond the target.

Bonus and Penalty Payments

14.18 Article 11(3) of the 2019 Regulation states that capacity incentive schemes should contain bonus and penalty payments that have a "*material impact on revenue at risk*". Bonus payments are capped at 2% of determined costs and

penalty payments must be equal to or greater than bonus payments (but no greater than 4% of determined costs).

Setting Parameters for Capacity Incentive Schemes

14.19 The approach to setting the parameters is with reference to the proposed capacity targets, as discussed in Section 11.

14.20 The objective of the capacity incentive scheme is to provide financial incentives to ANSPs to ensure that ATFM delay is not excessive, ideally in line with the economically optimum level. Given the trade-off between the provision of capacity and cost, it is likely to be disproportionate and inefficient to target zero ATFM delay, even if, in some years, a level of delay at or close to zero is ultimately achieved.

14.21 The capacity incentive scheme should encourage the ANSP to, for example, staff at optimal levels, efficiently invest in infrastructure, or enhance the efficiency of operational procedures. They should, in particular, disincentivise ANSPs from making cost savings by degrading capacity. Ideally, incentive schemes should be:

- Consistent with economic efficiency, such that they incentivise efficient decisions in the planning and use of airspace in the context of SES objectives.
- Clear and intelligible, such that the objectives of the incentive are clear and the outcomes easy to measure and monitor relative to the targets set.
- Straightforward to implement and monitor, such that administrative costs are proportionate relative to the scope of the scheme.
- Credible with stakeholders in terms of understanding and acceptance of the rationale and objectives.
- Minimising of the risk of incentivising perverse behaviours or generating arbitrary outcomes.

Issues paper responses on Incentive Schemes

14.22 Ryanair stated that incentive schemes should be penalty only, providing the right incentives to deliver adequate services. The AirNav Ireland Staff Panel was of the view that penalty only incentives should not be used, but should be accompanied by a corresponding positive financial incentive. Aer Lingus was largely in agreement with the proposed incentive schemes.

14.23 Both AirNav Ireland and the Staff Panel were against the introduction of a financial incentive or penalty programme for the Environment KPA.

En Route Capacity Incentive Scheme

14.24 The En Route incentive scheme parameters for RP3 were set in the context of AirNav Ireland having very low levels of En Route ATFM delay. In summary, AirNav Ireland would begin to incur financial penalties if performance were to

deteriorate beyond the annual target. The pivot value was set at the level required to achieve this, given the requirement for the deadband and threshold to remain constant. As can be seen from Section 11, AirNav Ireland has met the En Route ATFM delay target in RP3. The year 2023 saw the largest level of delay minutes per flight (0.02 min/flight) which was still below the target of 0.03 min/flight. We did not consider it appropriate to provide for bonus payments, so set the scheme to be penalty-only.

14.25 As discussed further in Section 11, we are proposing to retain the target for 2024 (0.03 mins/flight) as the RP4 target for 2025 and 2026, before lowering the target to 0.02 mins/flight from 2027 onwards. Based on the RP4 draft Performance Plan template for submission to the European Commission, it appears to be anticipated that, if the pivot values are Fixed, they would be set in alignment with the En Route ATFM delay targets, rather than set below those targets, as we did for RP3. As specified by the Implementing Decision, the threshold for Ireland should be +/-0.05 around the pivot value.

14.26 We have considered how these parameters could be set to collectively deliver on the principles outlined above, in the case of the En Route incentive scheme:

- If Fixed pivot values are to be aligned to the annual delay targets, rather than set below the annual delay targets, this leaves the deadband as the primary flexible parameter. We note that, if the deadband is set to zero, this would deliver the same result as was considered appropriate for RP3, namely that service quality rebate payments start to be paid at the point where the delay target is exceeded. It is not apparent why there should be a deadband beyond the target, which is not consistent with the approach we take to service quality metrics in other contexts such as at Dublin Airport, where revenue adjustments begin to take effect once the target is not met.
- Given that we already propose to set determined costs at a level which is consistent with delivering very low delay performance throughout RP4, at or below the level of delay observed in RP3, it is not reasonable to provide for bonus payments. This would effectively double count the costs of the additional measures to achieve the capacity targets; the forecast costs of delivering these additional measures to achieve the capacity targets would already be remunerated, but then also a further bonus for achieving those same targets would also be remunerated. Further, given that the deadband must be symmetric, if the deadband is set to zero as suggested above, and the bonus amount is set to a level greater than zero, then AirNav Ireland would receive a bonus merely for maintaining ATFM delay performance at the current level. We do not consider that this would be a credible outcome in the context of the other aspects of the proposed Performance Plan.

14.27 We consider that a second reasonable approach would be to set Modulated pivot values based on CRSTMP delay, rather than Fixed pivot values. The main benefit of such an approach would be to reduce the risk of AirNav Ireland being penalised for an increase in non-CRSTMP delay, making the incentive scheme more targeted towards factors within the control of AirNav Ireland. Given the

reduced risk of such an outcome, we consider that it would also be appropriate to set Modulated pivot values below the capacity targets, perhaps 0.01 minutes below. For example, if the 2025 capacity target is 0.03 minutes, the pivot value might be modulated to 0.02 minutes per flight, with no deadband. In that case, the penalty would start to become payable once CRSTMP delay exceeds 0.02 minutes per flight. We think that it would be appropriate to specify, as part of the Final Decision, what those Modulated pivot values would be for each year of RP4, as part of setting out a complete ex-ante decision on the price control and the allocation of risk.

14.28 As set out in the 2019 Regulation, penalties cannot exceed 4% of the determined costs. For RP3, for the reasons set out in the Final Decision on the RP3 Performance Plan, we set the penalty amounts to 0.5% for 2022 and 2023, and 1% for 2024. Given the need to balance the requirement of a material impact on revenue without seeking to over-penalise, we see no reason to deviate from a maximum penalty of 1% of Determined Costs. This equates to €1.6m in nominal terms by 2029, equivalent to approximately 22% of the forecast return on capital or a reduction in the nominal WACC from 6.4% to 4.8%. This is therefore a penalty amount which clearly meets and exceeds the materiality requirement specified by the 2019 Regulation.

14.29 As noted above, En Route ATFM delay attributed to non-ANSP causes (i.e. codes other than CRSTMP), has historically been at or close to zero. This means that there is a less compelling basis to set Modulated pivot values. We therefore propose to set Fixed pivot values, but are open to either approach, depending on the views expressed by stakeholders.

14.30 In summary, AirNav would begin to incur financial penalties if performance were to deteriorate beyond the annual target. The full penalty of 1% would only become payable if delay were to be at or above 0.05 minutes in excess of the pivot value.

Table 14.2: Proposed En Route Incentive Scheme Parameters

Parameters	Unit	2025	2026	2027	2028	2029
Target	Avg. mins delay	0.03	0.03	0.02	0.02	0.02
Pivot Value	Avg. mins delay	0.03	0.03	0.02	0.02	0.02
Deadband	Fraction of min	±0.0 minutes				
Threshold	Avg. mins delay	±0.05				
Max. Bonus	% of DC	0%				
Max. Penalty	% of DC	1%				

Source: IAA

Terminal Capacity Incentive Scheme

14.31 The Terminal incentive scheme parameters set for RP3 took account of the fact that the vast majority (c98%) of arrival ATFM delay in RP2 was non-ATC related, with almost no CRSTMP delay. We therefore set the deadband as wide as possible to avoid AirNav Ireland being penalised for factors outside its control.

14.32 This pattern has continued in RP3. As illustrated in Section 11, although the terminal target was missed in 2023, this was almost entirely attributable to non-ATC delay causes, meaning that, had we not set the deadband so wide, AirNav Ireland would have received a penalty for factors outside its control.

14.33 As set out in Section 11, we propose to set total arrival ATFM delay targets of 0.2 minutes per flight. Given that, unlike En Route ATFM delay, the majority of arrival delay is not ANSP attributable, there is a stronger basis for setting Modulated pivot values in the manner described above. We therefore propose to set Modulated pivot values of 0.1 minutes of delay per flight, but limited to CRSTMP delay only. This approach provides for a more targeted incentive scheme, meaning that AirNav Ireland would not pay any penalty for factors outside its control, but is also more effectively incentivised in respect of ensuring that there is no material increase in the current low level of CRSTMP delay.

14.34 Other than that, we propose to set the parameters in the same manner as described above in relation to the En Route incentive scheme, as shown in Table 14.3.

Table 14.3: Proposed Terminal Incentive Scheme Parameters

Parameter		2025	2026	2027	2028	2029
Total delay target	Avg. mins delay	0.2	0.2	0.2	0.2	0.2
Pivot Value*	Avg. mins delay	0.1	0.1	0.1	0.1	0.1
Deadband	Avg. mins delay	0				
Max. Bonus	% of DC	0%				
Max. Penalty	% of DC	1%				

Source: IAA

**Modulated based on CRSTMP delay codes only*

Environment KPA

14.35 As set out in Section 10, we propose to set the KEA targets in line with the national reference values. In the Issues Paper, we noted that more work would be needed to establish the key drivers of KEA performance attributable to the ANSP, before any associated incentive scheme would be likely to produce better performance, rather than just perverse incentives to prioritise local rather than network performance, and/or arbitrary outcomes whereby factors unrelated to anything within the control of AirNav Ireland determines whether or not an incentive scheme penalty would be payable.

14.36 As also set out in Section 10, following research by the PRB into alternative indicators that could be used to measure ANSP environmental performance, it was concluded that no changes are to be made to the KEA metric ahead of RP4; it will remain the sole KPI in the Environment KPA of ANSP environmental performance. A number of new indicators will be trialled over RP4, with a view to potentially being used for target setting in the future. In that context, there is currently no basis to implement an environment KPA incentive scheme for RP4 and we do not propose to do so.

15. Appendix: Review of proposed new RP4 Capex

Introduction

15.1 This section provides an overview of the individual AirNav Ireland projects we propose to provide for within the RP4 draft Performance Plan. A number of our verification questions and requests for further information, particularly in relation to Technical Services and Operations, are currently outstanding or have not been answered in time for us to take account of the answers for the Draft Decision and instead will be concluded ahead of the Final Decision.

15.2 A summary table of the AirNav Ireland cost proposals and asset lives, as well as the IAA proposed asset lives, is included at the end of this section. In a number of cases, we are proposing to adjust asset life assumptions where we consider that the AirNav Ireland proposal does not represent a reasonable centreline estimate of the expected operating life of the asset.

15.3 Projects marked with '*' below denote that the project is considered a 'major investment' within the meaning of the 2019 Regulation.

Property, Security and Sustainability projects (Appendix 1)

15.4 In cases where we asked for additional cost-related information on property and security projects, AirNav Ireland provided breakdown analyses, most of which were in line with the level of detail we would expect given the stage of design of the specific project.

RP4-PROP-01 Ballycasey Building Extension - Proposed Cost €12.2m*

15.5 This project provides for the construction of an extension of the administration block of the Ballycasey centre and will provide for a dedicated Technical Control Desk (TCD) adjacent to the new test and proving facility. The new building will consist of new office accommodation for engineering staff, rest rooms for operations staff, new equipment test and proving facility and new strategic spare stores. The current facility is rented offsite.

15.6 AirNav Ireland says that the need for this project is driven by the increase to staff numbers at Shannon ACC (up 38% since the building was commissioned in 2004), the need for rest rooms arising from controller fatigue regulations and also EU regulations which place additional requirements on simulator equipment that has increased the amount of space that simulator equipment takes up.[63] Essentially, AirNav Ireland has explained that the extension is driven by the expansion of services provided at Shannon since 2004 and additional regulatory requirements which have consumed all free space in the existing facility.

15.7 AirNav Ireland provided us with Order of Magnitude costings for this project

[63] COMMISSION REGULATION (EU) 2015/ 340 - of 20 February 2015 - laying down technical requirements and administrative procedures relating to air traffic controllers' licences and certificates pursuant to Regulation (EC) No 216/ 2008 of the European Parliament and of the Council, amending Commission Implementing Regulation (EU) No 923/ 2012 and repealing Commission Regulation (EU) No 805/ 2011 (europa.eu)

which match the cost estimate proposed in the Business Plan (allowing for Tender Price Inflation).

15.8 As per our approach in RP3, we would expect the useful life of a building extension of this nature to be in the region of 25 years rather than the 20 years stated in the Business Plan and propose to adjust the asset life accordingly.

RP4-PROP-02 Dublin ATC Building Extension/ Separate Building- Proposed cost €7.5m*

15.9 This project will see either construction of an extension of the existing ACC building, or construction of a completely separate block. The new space will consist of strategic parts stores, relocation of Technical Control Desks (TCD) from existing equipment room, office accommodation and training rooms for new incoming engineering staff, canteen facilities for increased site numbers.

15.10 AirNav Ireland's stated need for this facility is similar to the Ballycasey facility: increases to staff numbers, additional regulatory obligations concerning ATCO fatigue, and also the space requirement to store strategic spare parts components for both the tower and ATCC facilities.

15.11 AirNav Ireland has provided us with Order of Magnitude costings from the QS for this project. While AirNav Ireland has proposed a cost estimate of €7.5m for this project in its Business Plan, we note there is a slight mismatch between this and the total Order of Magnitude project cost estimates which amount to just over €7m. Given that we propose to make a programme level cost adjustment rather than project level adjustments, we have used the Business Plan figure of €7.5m in our model for the Draft Decision.

15.12 As per the Ballycasey project, we would expect the useful life of a building of this nature to be in the region of 25 years rather than the 20 years stated in the Business Plan and propose to adjust the asset life accordingly.

RP4-PROP-03 Flood Mitigation Works CEROC -Proposed cost €4m

15.13 The aim of the project is to implement flood mitigation measures at CEROC. Works at the facility will include diversion of existing drainage/culverts away from critical areas, stormwater system upgrades and flood proofing of electrical rooms.

15.14 We note that the need for this project arose when the Office of Public Works (OPW) Preliminary Flood Risk Assessment (PFRA) indicated that the facility site in County Clare falls within an indicative coastal flood zone. The most significant flood risk to the CEROC site is from tidal flooding associated with the Fergus Estuary.

15.15 AirNav Ireland has provided us with Order of Magnitude costs from the QS for this project which reflects the cost estimate proposed in the Business Plan.

15.16 We agree with the proposed asset life of 20 years.

RP4-PROP-04 Malin Head Radar Building Replacement -Proposed cost €6m

15.17 This project will either replace the current Malin Head radar building or carry out significant structural works on the building. The RP4 aspect of the project involves replacing the complete structure of the building while engineering works will occur during RP5. The need for the project has come about due to MICA content. When we asked if AirNav Ireland had explored the possibility of redress for the MICA issue, it noted that the 2022 Act applied only to the "*principal private residence*" which the owner occupies as "*his or her only or main residence*" and the Act made no provision for "*commercial buildings or structures*".[64]

15.18 The RP4 funding is to replace the building structure, while also maintaining the existing building. AirNav Ireland says that the maintenance of the current building is necessary to slow down the rate of decay, allowing enough time to construct a replacement facility. The photos included in the site inspection report show clear signs of cracking on the walls at this facility.

15.19 AirNav Ireland answered all of our questions relating to this facility and provided us with the results of the MICA site inspection. AirNav Ireland has explained how the cost estimate was derived from the Tooman radar tendered costs from 2023 for the radar facility at Dublin. Building on these costs, AirNav Ireland has assumed that the project will run up to mid-2027 and has therefore factored in forecast construction price inflation for this period. We find this approach to cost estimation reasonable.

15.20 AirNav Ireland does not expect to capitalise this project during RP4 as the new facility will not be complete and fully operational until RP5 when the full project will be capitalised. Hence the project is not actually included within the determined costs for RP4.

RP4-PROP-05 Plant Upgrade Works - Proposed Cost- €4m

15.21 This project is a replacement programme for end-of-life building plant and equipment. Works will include replacement of Heating, Ventilation, and Air Conditioning (HVAC), fire systems, electrical switchgears, and access systems. The project encompasses works on the main centres (Ballycasey, Dublin, CEROC) and remote radar locations. The project spend is split evenly between main and remote locations.

15.22 AirNav Ireland has confirmed that the costs for works at remote locations are based on equipment installed in 2024 by the facilities management company, including the retrofit of fire systems in Cork ATCC, Mt Gabriel and the installation of new systems in the Tooman radar building.

15.23 We agree with AirNav Ireland's asset life proposal of 15 years. This aligns with the asset life agreed for a similar programme in RP3.

RP4-PROP-06 Upgrade of Energy Maximum Import Capacity (MIC) - Proposed

[64] Remediation of Dwellings Damaged by the Use of Defective Concrete Blocks Act 2022

Cost €2m

15.24 This project aims to increase the Maximum Import Capacity (MIC) on multiple sites, to provide resilience and accommodate the introduction of new technology servers and supporting HVAC.[65] The locations in scope for this project include those sites which have been identified as operating at a power demand level in excess of 80%, mainly radar sites. AirNav Ireland says these sites have had additional equipment installed historically which has reduced the amount of power available for future upgrades and installations.

15.25 Based on our exchange with AirNav Ireland, there appears to be significant uncertainty over the cost estimate for this project given the early design phase of the project. The ANSP has not provided us with any supplementary information for this project.

15.26 The asset life of 20 years proposed by AirNav Ireland is reasonable.

U016 Cork ATC Extension- Proposed Cost- €3.5m

15.27 This project was included in the RP3 Performance Plan, but has been delayed. The plans provide for a 225 square metre extension to the existing Cork ATC tower building. The extension will provide for office spaces, an equipment storeroom, rest room, meeting room, welfare facilities and alterations/expansion of the Technical Control Desk (TCD) areas. In demonstrating the need for this extension, AirNav Ireland has referenced EU Regulation 2017/373 which sets out ATCO fatigue management requirements. As we remarked in our assessment of this project in RP3, as part of our rationale to reduce the programme by 20% overall, we were not fully convinced of the requirement for this project over RP3, which is perhaps reflected in AirNav Ireland's subsequent decision to postpone it.

15.28 Similar to our approach in RP3, while we do not plan to disallow any individual project, we are proposing to make a programme level adjustment which leaves the decision of whether to pursue this project up to AirNav Ireland. We have asked AirNav Ireland to confirm what the total Capex requirement for this project will be. Currently it appears the planned capitalisation amount in RP4 will exceed the total capital expenditure for this investment.

15.29 AirNav Ireland has increased the estimate for RP4 to €3.5m, up from €2.33m in RP3. It says that this is a revised costing of the same proposed infrastructure allowing for construction inflation from 2019 when the initial estimate was developed for RP3. The considerable spikes in construction price inflation which occurred in the aftermath of Covid-19 are reflected in the revised cost proposal, which factors in expected inflation up to 2027 when AirNav Ireland expects to finalise construction and fit-out. We have verified this based on the SCSI construction inflation index over 2020-2023 and assuming 2% thereafter up to 2027.[66] This provides an estimate of €3.4m, close to that of AirNav Ireland.

[65] MIC is the total electrical demand which can be placed on the network system.
[66] Layout 1 (scsi.ie)

15.30 The asset life of 25 years set for RP3 is retained.

W006 Conditional Survey Works - Proposed cost €2m

15.31 This project is continuing from RP3 and will include structural, external roofs/walls works, and mechanical and electrical maintenance at five different central and remote sites. The scope is expanded to locations not included in the previous submission. 50% of the project costs are associated with the radar sites at Malin and Dooncarton, with the remaining 50% attributed to works at Shannon tower, Shannon contingency tower and the Dublin contingency tower.

15.32 As in RP3, we expect the useful life of works of this nature to be in the region of 20 years.

W008 Plant Upgrade Works- Proposed cost €2m

15.33 The project involves the replacement of end-of-life mechanical plant and equipment as well as associated electrical/civil works at AirNav Ireland headquarters. Plant items to be replaced include HVAC systems, fire suppression media and systems, and switchgears.

15.34 This project is continuing from RP3, and we have asked AirNav Ireland to confirm what elements of the RP3 project have been delivered to date. We will confirm this ahead of the Final Decision.

15.35 The asset life of 15 years was set for this project in RP3.

V002 EV Charging Installations- Proposed cost €0.5m

15.36 This project is continuing under a previous provision for Electric Vehicle Charging, under the RP3 climate action plan project. In RP4, the aim is to deliver EV charging infrastructure into the CEROC and Cork ATC sites.

15.37 We have asked AirNav Ireland to confirm what the total Capex requirement for this project will be. Currently it appears the planned capitalisation amount in RP4 will exceed the total Capex proposed in the Business Plan for this investment.

15.38 The need for this project is to meet a government requirement to provide 10% of car parking spaces that are EV enabled.

15.39 The asset life of 15 years was set in RP3.

Y008 ATC Chairs - Proposed cost €400,000

15.40 We have asked AirNav Ireland to confirm what the total Capex requirement for this project will be. Currently it appears the planned capitalisation amount in RP4 will exceed the total Capex proposed in the Business Plan for this investment.

15.41 This minor project is part of an ongoing programme for fatigue management which involves the continuous replacement of ATCO chairs. The key driver is

safety and to ensure workstations are fit for purpose over extended occupation. The cost estimate is based on RP3 costs for such chairs.

15.42 The asset life of 5 years is reasonable.

RP4-SECU-01 Security Systems and Equipment Upgrade Works- Proposed Cost €4.99m

15.43 This project will involve security system and equipment upgrade works at AirNav Ireland Facilities. We will not publish specific details on the nature of this project.

15.44 AirNav Ireland has provided a breakdown of spend per site for the security equipment along with a milestone table of when it expects work to be completed at each site. The cost estimates are based on AirNav Ireland's contracted Quantity Surveyors via a Framework Agreement but appear rather uncertain at this point with the proposed Business Plan cost for the Ballycasey location varying with the supplier quotation provided to us for this site.

15.45 In line with a similar project in RP3 we propose to amend the equipment asset life to 10 years.

RP4-SUST-01 Heating/Cooling Upgrades- Proposed Cost €4.82m

15.46 AirNav Ireland has provided us with an assessment by ARUP on AirNav Ireland's sustainability opportunities (the 'ARUP Assessment') and the AirNav Ireland Sustainability Management Plan for 2024-2029. We have reviewed this material as part of our assessment of the sustainability projects.

15.47 This project will deliver heating and cooling upgrades to Ballycasey, Cork ATC, CEROC, Dublin Air Traffic Control Centre and the Times Building. The upgrades will include the installation of an upgraded chiller system, an air handling unit upgrade, pump and fan motors, and in the case of Cork ATC, an internal Variable Refrigerant Flow system (VRF) replacement. We expect such investments to reduce energy costs and have taken account of this in the Opex forecasts.

15.48 The overall cost proposal in the AirNav Ireland Business Plan is derived from the ARUP Assessment which includes cost breakdowns for each component of the project at each site. The work is expected to begin at the Dublin Air Traffic Control Centre at the end of 2024. AirNav Ireland has provided us with Order of Magnitude Costings from the QS in respect of the works at this site which align with the ARUP Assessment.

15.49 AirNav Ireland says the project is proposed as part of ongoing efforts to reduce energy usage in accordance with government regulatory requirements, and will contribute towards AirNav Ireland's obligation to improve energy efficiency by 51% by 2030 and reduce carbon emissions by 50% by 2030.

15.50 The ARUP Assessment detailed that most equipment in the Phase 2 Building of Dublin Air Traffic Control Centre is nearing or past its expected lifespan. The

report made suggestions for upgrades that would reduce AirNav Ireland's energy and carbon consumptions. This project aims to implement those suggestions.

15.51 The proposed asset life of 15 years is reasonable for system upgrades of this kind.

RP4-SUST-02 Climate Action Plan – Lift upgrade, Radiator & Pipe Infrastructure and Low energy lighting- Proposed cost €1.76m

15.52 This project will deliver lift upgrades to Cork ATC and the Times Building, replace radiator and pipe infrastructure at CEROC and Ballygireen and replace high energy demand lighting with more efficient low energy lighting at Dublin ATC, Shannon ATC, CEROC, and Cork ATC.

15.53 In response to our question regarding obsolescence of the existing infrastructure, AirNav Ireland confirmed that the current lighting systems include a range of high energy lighting systems such as fluorescent 58W fittings which were installed prior to availability of LED DALI alternatives.[67] A similar situation exists with gas filled flood lighting could be replaced with low energy LED alternatives. AirNav Ireland says that installing these replacements is in line with its commitment to improve energy efficiency by 51% by 2030.

15.54 AirNav Ireland has provided us with Order of Magnitude costings for the lighting aspect of this project. The need for and benefit of the project has been demonstrated in the ARUP Assessment, which outlines the impact of energy conservation measures on energy reduction at Dublin ATC, Cork ATC and Shannon ATC.

15.55 The scope of the lighting project involves the installation of low energy external lighting at DATCC to replace higher energy demand lighting currently in place which is obsolete, and low energy internal lighting in DATCC, Shannon ATC, Shannon contingency tower and Cork ATC in order to replace higher energy demand lighting currently in place which is also obsolete. The project further involves the installation of intelligent lighting controls within DATCC. Again, we expect such investments to reduce energy costs and have taken account of this in the Opex forecasts.

15.56 The Order of Magnitude costings from the QS on the lighting upgrades are based on the existing knowledge of the sites, the ARUP "Energy and Carbon Saving Opportunities" assessment and the general condition of the existing installations. The QS costs proposes a cost of 20% above what we find in the ARUP cost estimate, which is likely due to the works at Cork ATC for which no estimate is included in the ARUP assessment.

15.57 While less detail has been made available for the lift and radiator/pipe upgrades in the project, AirNav's Business Plan cost estimates for these works are supported by the ARUP cost assessment.

[67] Digital Addressable Lighting Interface

15.58 AirNav Ireland has proposed a 15-year asset life for each element of this project (lighting, lift upgrade and radiator/pipe upgrades). We find it unlikely that each component of this project will depreciate over the same number of years. We are therefore proposing to set asset lives of 10 years, 25 years, 15 years and 20 years for the lighting, lift upgrade, radiator upgrades and pipe upgrades respectively.

RP4-SUST-03 Photovoltaic (PV) System Installation- Proposed cost €2.03m

15.59 This project will involve PV Installation at CEROC & Ballycasey. The PV installation will be used to power CEROC, and the excess produced will be used to offset the power used at other AirNav Ireland installations. AirNav Ireland says the installation will reduce the dependence on the national grid and will produce renewable energy which drives energy efficiency and carbon emission reduction efforts in line with national policy.

15.60 The underlying cost estimate is based on the ARUP Assessment which includes contractor supply and install costs. The cost estimate is based on PV installations at NAC and Ballycasey.

15.61 AirNav Ireland proposes a 20-year asset life, which is somewhat lower than we would expect for a new PV farm installation. Consistent with the asset life we have previously set for PV farms at Dublin Airport, we propose to amend the asset life to 25 years.

ICT Projects (Appendix 2)

ICT security project- Proposed cost €400,000

15.62 This is an ICT security related project, therefore we are not publishing specific details. AirNav Ireland has provided us with supplier quotations which support the underlying cost estimate for the cost proposal.

15.63 The proposed asset life of 3 years is reasonable for such a project.

2025-2029 RP4 ICT Infrastructure Life Cycle Management & Compliance- Proposed cost €4.85m

15.64 This project will deliver lifecycle replacements and upgrades to the AirNav Ireland ICT infrastructure. It covers workstation replacements, upgrades to the private cloud, backup servers, and hardware and software upgrades. A similar project was included in RP3.

15.65 AirNav Ireland has said the need for the continuous updates to ICT infrastructure is driven by the increasing demands on ICT, including the increase in the volume of data being stored and processed, the dynamic growth in computing power needed to implement and maintain the infrastructure, while also maintaining compliance and ensuring that cyber security maturity levels are continuously improved.

15.66 It has provided us with vendor quotations for the various components of the ICT

lifecycle management project which are based on current market estimates. These quotations form the basis for the underlying cost estimate. While some of the sub-projects are well developed and AirNav has supplied accompanying Order of Magnitude costings, the cost certainty around other elements is less clear at this point.

15.67 AirNav Ireland has proposed an asset life of 3 years for the equipment in this project. This is broadly in line with what we would expect for ICT equipment and mirrors the asset life set for the RP3 project.

Technical Services & Operations Projects (Appendix 3)

RP4-SURV-01 Air Traffic Control Centre (ATCC) Generators & Switchgear - Proposed cost- €0.7m

15.68 This minor project will replace generators and switchgear equipment at Dublin and Ballycasey ATCCs that is over 24 years old. The project will deliver three 800KVA generators in Ballycasey, two 400KVA generators in Dublin and six power distribution switchgear cabinets in Dublin and in Ballycasey. The aim of the project is to ensure power supply to all ATM systems at Dublin and Ballycasey, thus maintaining business continuity for AirNav Ireland.

15.69 The objective and scope of the project is reasonable given the age of the current equipment. The cost estimate appears to be high level and is said to be based on knowledge and experience within AirNav Ireland.

15.70 The proposed asset life of 8 years is consistent with the asset life agreed for a similar programme in RP3.

RP4-SURV-02 Modular Uninterrupted Power Supply (UPS) supporting TopSky- Proposed cost €0.85m

15.71 Currently all ATC positions in Shannon and Dublin ACCs are backed-up by individual mini-UPS systems. This minor project will replace the mini-UPS systems with modular UPS at Dublin and Ballycasey. AirNav Ireland says that the modular UPS will provide more resilient and scalable back-up power supplies to all ATC positions and is a key enabler for the TopSky ATM system upgrade being delivered through the COOPANS alliance. The key drivers for the project are safety and ensuring business continuity for AirNav Ireland.

15.72 The cost estimate is based on the assessment of AirNav Ireland mechanical and electrical engineers, and through interaction with vendors.

15.73 The proposed asset life of 8 years is reasonable.

RP4-SURV-03 National Clock Systems- Proposed cost €0.15m

15.74 This minor project will deliver 20 time servers and 60 clock displays at Ballycasey, Dublin, Shannon, Cork and CEROC. The scope of the project allows for extra contingency severs and clock displays.

15.75 AirNav Ireland has proposed this project to address the obsolescence of multiple synchronisation systems at once, and to simultaneously add resilience to the ATM system by ensuring the consistent synchronisation of ATM systems. Up until now, synchronisation has often been delivered independently for each system leading to inconsistent reliability of synchronisation systems.

15.76 The cost estimate is based on similar historical purchases for CEROC.

RP4-SURV-04 Radar Upgrade Phase 2- Proposed cost €22m*

15.77 This major project forms part of AirNav Ireland's national radar upgrade programme. The first phase of radar upgrades began in RP3. Phase 2 is planned to involve the upgrade of the remaining four radar sites (Shannon, Cork, Dublin Radar 3, Mount Gabriel 2) to RSM 970 NG models, including the three combined airport radars.[68] Radar subsystems, such as radar antennas, radomes and ancillaries at all 8 radar sites will be addressed in this phase.

15.78 This project aims to ensure that AirNav Ireland will have sufficient, reliable, and accurate surveillance coverage of the Irish airspace in order to maintain 5 nautical mile (NM) and 3NM horizontal separation of aircraft, in the En Route and Dublin Terminal airspace respectively.

15.79 We have asked AirNav Ireland to provide us with more detail on the underlying cost basis for this major project, which may become available ahead of the Final Decision. We understand the cost proposal includes a 10% extra over to allow for additional costs for ancillary services during installation, such as crane hire, but it is not clear whether this may also be included in any preliminaries.

15.80 The cost of the radar equipment to be replaced is the same at all sites, however, at two sites the domes are larger and therefore more costly. A further variation in the costs between radar sites results from the need to replace antennae at sites without domes.

15.81 We asked AirNav Ireland if it had further explored whether any satellite-based alternatives to radar may become available that could provide equivalent surveillance without the requirement for such investment. AirNav Ireland had previously stated that its long-term strategy will involve supplementing radar with Automatic Dependent Surveillance–Broadcast (ADS-B), eventually allowing up to 50% rationalisation of overlapping radars. AirNav Ireland confirmed that while the ADSB project is in progress, it is not completed, and re-iterated the need for the radar upgrades to avoid end-of-life issues which would lead to the replacement of several radars in the future.

15.82 As it is in line with the asset life we used for phase 1 of the radar upgrades in RP3, we agree with AirNav Ireland's proposed asset life of 12 years.

RP4-SURV-05 Surveillance Data Distribution System (SDDS) & Recording

[68] https://www.thalesgroup.com/en/markets/aerospace/air-traffic-management/surveillance/rsm-ng

systems- Proposed cost €0.15m

15.83 This minor project will deliver Surveillance Data Distribution Systems and recording systems to Dublin, Ballycasey and CEROC ATCCs (two SDDS systems in each of Dublin Shannon and CEROC). The SDDS is provided by Eurocontrol who provide the software licence. The funding for this project is to purchase the associated hardware. AirNav Ireland has based the cost estimate for this project on a similar project for ARTAS & SASS-C in RP3. AirNav Ireland provided us with cost detail for ARTAS in RP3.

15.84 The new Surveillance Data recorders are required to support the Surveillance Performance validation requirements as Surveillance Analysis Support System for ATC-Centre (SASS-C) is now focused on surveillance data analysis rather than surveillance data recording. The project is also said to be an enabler for TopSky ATC One.

15.85 The proposed asset life of 8 years is reasonable for this project and in line with a similar RP3 project.

RP4-SURV-06 ARTAS and SASS-C- Proposed cost €0.9m

15.86 The purpose of this project is to upgrade the Surveillance Tracker systems (ARTAS) and Surveillance Performance Validation Systems (SASS-C) in Dublin, Ballycasey, and CEROC to the supported Eurocontrol release versions. The scope of the project also allows for additional ARTAS systems to support the TopSky ATC One platforms. The ARTAS system is needed to collate the surveillance information from all radar and ADS-B sensors. The project will deliver twenty-four new ARTAS server systems and nine SASS-C analysis servers.

15.87 The project cost has increased from €0.5m in RP3. This reflects the need to deliver ten additional servers that will support TopSky ATC One.

15.88 The upgrade of ARTAS is required during each regulatory period due to the evolution of ARTAS hardware and software. The key benefit of this project is that these systems will be fully supported by Eurocontrol ensuring timely assistance in the event of issues.

15.89 The proposed asset life of 8 years is consistent with what was assumed for the RP3 project.

T010 Building Management System (BMS) Upgrade Dublin/ Ballycasey- Proposed cost €0.5m

15.90 The purpose of this project is to upgrade the Building Management Systems (BMS) in the Dublin and Ballycasey ATCCs, which AirNav Ireland states are at end of life. This is reasonable given that the existing infrastructure is 18/19 years old.

15.91 The proposed asset life of 8 years is in line with the undelivered project from RP3.

W002 RADAR Overhaul – Remote Control and Monitoring System (RCMS) Phase 1- Proposed cost €4m

15.92 The purpose of the national radar upgrade project is to upgrade the eight radars that were installed between 2005 and 2011 to expand their working lives. Given the age of the radars, this is reasonable. Phase 1 of the project, which is continuing from RP3 addresses the upgrades of the oldest 4 of these 8 radars Woodcock Hill, Malin, Dooncarton and Mt. Gabriel 1.

15.93 This project will ensure that four AirNav Ireland radars will be upgraded, ensuring that it has sufficient, reliable and accurate surveillance to maintain 5NM horizontal separation of aircraft. The project cost is inclusive of the cost of upgrading the Remote Control and Monitoring System (RCMS) for all AirNav radars. During RP3, AirNav Ireland provided additional material to support the need for the radar upgrades.

15.94 The proposed asset life of 12 years for this project in RP3 is retained.

W003 Generator Replacement Programmes- Proposed cost €0.375m

15.95 This minor project is undelivered from RP3 and will improve power supply resilience to key radar and VHF Communication sites where the generators are at end of life and the identified VHF Communication sites currently have no backup generators. The project will deliver two new generators (Rosslare and Cork) and replace five other generators (Dooncarton, Woodcock Hill Radar, Shannon Radar, Mt Gabriel and 1 Mt Gabriel 2).

15.96 The proposed asset life of 8 years for this project in RP3 is retained.

Y002 ATC 2Kx2K Screen Replacement – Proposed cost €1.5m

15.97 This project will replace the ATC screens in Dublin and Ballycasey ATCCs. The ATCC screens were initially installed in 2007, and then upgraded with LED backlights in 2016 to extend their usable life. AirNav Ireland proposes to replace 115 screens in total. These screens are stated to be at the end of their useful lives, which is reasonable given their age.

15.98 AirNav Ireland has provided us with an investment appraisal of this project with cost breakdowns for the new screens and 58 console to desktop screen conversion kits. This internal business case supports AirNav Ireland's cost proposal.

15.99 The proposed asst life of 8 years is in line with what we would expect.

R005 NAVAIDS Dublin and Shannon- Proposed cost €9m*

15.100 This major project is continuing from RP3 with no change in scope or cost. The project will replace the existing Instrument Landing System (ILS) and Instrument Runway Visual Range (IRVR) systems at the three state airports, Dublin, Shannon, and Cork.

15.101 AirNav Ireland states that the current ILS and IRVR systems are reaching end of life having been installed between 2004 and 2007 and that some components of the systems are obsolete. This is reasonable, on the basis that the systems have been in place for 14-17 years. In RP3 AirNav Ireland supplied a condition report for the current ILS cabins which demonstrated that the cabins were in need of repair. The RP3 business case also included high level cost details and the results of a multi criteria analysis.

15.102 The asset life set when this project was assessed for RP3 was 12 years.

R006 Airfield Cabling Replacement - Proposed cost €3m

15.103 This project will involve upgrades to airfield cables at Dublin and Shannon airfields including new ILS/IRVR ducting and cabling to Shannon airfield, new diverse cable routing from Shannon tower to Ballycasey, new airfield ducting and cabling from Dublin south runway to new ILS sites. Elements of the Shannon and Dublin airfield cables have been in service for over 40 years and run the risk of failure given their age. The work on airfield cables at Cork was completed in RP3.

15.104 Data for the Instrumented Runway Visual Range (IRVR) and Instrument Landing system (ILS) is transmitted on the existing airfield cables. The cables are at risk of failure due to the point in their operational life which could potentially result in the ILS or IRVR being unavailable. The need for the project at this time is therefore clear given the operational impact AirNav Ireland would face should the current cables fail.

15.105 This project is continuing from RP3, but the cost estimate has been revised upward from €2m. In response to our questions on the cost increase, AirNav Ireland has said the cost increases are linked to high inflation since the project proposal stage and the delays that have occurred in progressing at Dublin and Shannon. The Shannon scope has also been expanded to include backup power to AirNav Ireland Navaids equipment. As the cost estimate for RP3 contained a €0.5m spend for work at Cork Airport which is now complete, the RP4 cost estimate for Dublin and Shannon represents a 50% increase since RP3. Less than half of this cost increase can be attributed to inflation while there is less certainty around what AirNav Ireland has referred to as increases in scope since RP3. Final costs will become clearer when the tender process has been completed.

15.106 The asset life of 20 years was set for this project in RP3.

R016 Met Server: Shannon, Cork and Dublin - Proposed cost €3m

15.107 The aim of this project is to ensure the availability of accurate Local Airport Weather information by upgrading the existing METREP function in COOPANS. This upgrade was completed in Dublin ACC during RP3.This project is linked to the AMAP project which has been delivered by MET ASD which covers the new MET sensors at each airfield and runway (Dublin, Cork and Shannon). AirNav Ireland will provide the MDP (MET Data Processing) system to take the MET feeds into AirNav Ireland’s ATC centres and towers.

15.108 The need for this project is driven by a regulatory requirement to produce runway condition reports in accordance with ICAO Global Reporting Format for Runway Surface Conditions GRF/RCR regulation and meet the EU 2017/373 regulation Met requirements. The project should result in improved local airport weather information, and reduced costs arising from replacing the current manual Met observer interface with automated weather systems (as discussed in Section 7 in relation to the AMAP project).

15.109 This project is continuing from RP3, but the cost estimate has been revised upwards from €1.8m. There remains some uncertainty around the revised cost estimate for this project, especially for Ballycasey and Shannon tower MET Data Processing (MDP) System where AirNav Ireland is proposing a significant increase in cost without any clear change in scope relative to RP3.

15.110 The asset life set at RP3 was 8 years.

RP4-COMM-01 Midlife Upgrade for CEROC Main R&S VCCS – Proposed cost €2m

15.111 This project involves a midlife upgrade of the CEROC main Rohde & Schwarz Voice Communication and Control Systems (VCCS). The stated aim of the project is to ensure continuity of service by providing contingency for communications services for Ballycasey ACC. Works will include the upgrade of COTS (Commercial off the shelf) hardware (servers, switches, routers, gateways, operating working positions, firewalls, etc.) to enable continued support from the manufacturer due to the end of life of hardware, and software/firmware upgrades to allow control and interaction with VHF radios.

15.112 The existing CEROC equipment was purchased in 2017 and went operational in 2019. Support for the current product will expire in 2026, which, it is accepted, requires AirNav Ireland to upgrade the system in order to ensure manufacturer support.

15.113 While no detailed cost information has been provided, AirNav Ireland has advised us that an updated quotation assessment is in progress for this project and will be provided to us when available.

15.114 AirNav Ireland has proposed an asset life of 8 years for this project. This is a somewhat shorter asset life than what we would expect, in circumstances where the upgrades are expected to prolong the VCCS lifespan by a further 15 years. We propose to set the asset life at 15 years for this project.

RP4-COMM-02 Communications & Navigation Test Equipment- Proposed cost €0.35m

15.115 This minor project covers the Capex necessary to procure new communications and navigation test equipment for AirNav Ireland's engineering division to test and maintain its communication and navigational assets. The stated need for this project is to update functional test equipment, and calibration and verification of operational equipment to meet ICAO annex 10 standards.

15.116 AirNav Ireland has proposed a 5-year asset life in the Business Plan. Based on a similar project in RP3 where an asset life of 8 years was set, we propose an asset life of 8 years for this project.

RP4-COMM-03 Dublin & Ballycasey CVF VCCS Replacement - Proposed cost €0.75m

15.117 This minor project is related to an RP3 project under which a Voice Communications & Control Switch (VCCS) was procured and installed in Dublin ATC and tower. During RP4, a similar VCCS is scheduled to be installed in Ballycasey ATC. This RP4 project covers the cost to the modification of the Ballycasey CVF to be able to accommodate the new planned VCCS installation and the process of extending the VCCS into the current Dublin CVF for contingency and training purposes.

15.118 The need for project is therefore to provide contingency voice communication services at Dublin and Ballycasey.

15.119 While no information has been made available to date on the underlying cost basis for this project, AirNav Ireland has committed to sharing with us the quotations upon which the cost estimate was derived ahead of the Final Decision.

15.120 The proposed asset life of 8 years is reasonable.

RP4-NAVG-01 Doppler VHF Omni Directional Range (DVOR)/Distance Measuring Equipment (DME) – Proposed cost €3m

15.121 This project will deliver new DVOR/DME equipment at Dublin, Cork, Shannon and Knock airports. DVOR/DMEs are used to support En Route services in the event of a Global Navigation Satellite System (GNSS) failure and act as conventional navigational aids. The existing DVOR/DMEs were installed between 2006 and 2008 and AirNav Ireland says they are approaching end-of-life with some components of the systems now obsolete. Given the age of the equipment, it is reasonable that this equipment should be replaced during RP4.

15.122 AirNav Ireland says replacing this equipment will lead to improved ground-based navigation aids and will ensure that AirNav Ireland's safety performance does not deteriorate. Maintaining DMEs at these sites ensures AirNav's compliance with Commission Implementing Regulation (EU) 2018/1048 Article 6 which states that "*Providers of ATM/ANS shall take the necessary measures to ensure that they remain capable of providing their services through other means where, for unexpected reasons beyond their control, GNSS or other methods used for performance-based navigation are no longer available*."[69]

15.123 While no information has been made available to date on the underlying cost basis for this project, AirNav Ireland has committed to sharing with us the quotations upon which the cost estimate was derived ahead of the Final Decision. We note that AirNav Ireland's Business Plan refers to 25% of the

[69] EU 2018/1048

spend relating to Knock airport. Ahead of the Final Decision, on receipt of the above quotations, we will verify that this element of the project has not been apportioned to the Terminal and/or En Route cost bases.

15.124 AirNav Ireland has proposed an asset life of 8 years for this equipment. This is shorter than what we would expect for the useful life of such equipment, noting that the current equipment will have been in place for approximately 20 years. We propose an asset life of 15 years.

RP4-NAVG-02 En route Distance Measuring Equipment (DME)- Proposed cost €2m

15.125 This project will replace En Route DMEs at Glenteige (GTG), Mohercrom (MCM) and Wolftrap (WTP). The existing DMEs at these sites were installed in 2004 and are now reaching the end of their useful life. As with the previous project, it is reasonable to expect that this equipment should be replaced during RP4.

15.126 AirNav Ireland says that replacing this equipment will lead to improved ground-based navigation aids and will ensure that AirNav Ireland's safety performance does not deteriorate. Maintaining DMEs at these sites ensures AirNav's compliance with Commission Implementing Regulation (EU) 2018/1048 Article 6 which states that "*Providers of ATM/ANS shall take the necessary measures to ensure that they remain capable of providing their services through other means where, for unexpected reasons beyond their control, GNSS or other methods used for performance-based navigation are no longer available*."

15.127 There is a degree of uncertainty around the cost estimate for this project. When we requested Order of Magnitude costings from the supplier, AirNav Ireland advised us that the cost estimate is currently being reviewed. We await further information ahead of the Final Decision.

15.128 AirNav Ireland has proposed an asset life of 8 years for this equipment. As per the previous project, this is shorter than what we would expect for the useful life of such equipment and propose an asset life of 15 years.

RP4-COMM-06 MEP EVCS Mid-life Upgrade - Proposed cost €1.75m

15.129 This project will deliver a mid-life hardware upgrade to the MEP Emergency Voice Communications Switch (EVCS) at all AirNav MEP EVCS systems. The current systems were installed nationally over the period 2012-2016 and this mid-life upgrade will maintain the equipment ahead of an anticipated full replacement in RP5. The current system hardware will not be supported after 2027 which is a key driving factor behind this upgrade project.

15.130 AirNav Ireland has committed to providing us with the Order of Magnitude pricing estimates ahead of the Final Decision.

15.131 We have identified that the proposed 5-year asset life is somewhat shorter than would be expected for a hardware upgrade, again noting the outturn operational life of the current equipment. Thus, we propose an asset life of 8 years,

consistent with similar hardware upgrades previously assessed.

RP4-COMM-07 VOIP Skysoft Recording System- Proposed Cost €0.5m

15.132 This minor project will deliver Skysoft 'off the glass' recording system upgrades at Dublin ACC and Ballycasey ACC, a replacement of the system at Shannon tower and a new 'off the glass' recording system at Cork tower. The existing hardware and software at Dublin and Ballycasey were installed in 2013. It is therefore reasonable that this equipment now be upgraded.

15.133 AirNav Ireland has committed to providing us with the Order of Magnitude pricing estimates ahead of the Final Decision.

15.134 The primary benefit of this project is to facilitate incident investigation at Dublin ACC, Ballycasey ACC, Shannon tower and Cork tower.

15.135 The proposed asset life of 8 years is reasonable for a hardware project.

S005 Voice Communication Switch - Proposed cost €4.5m

15.136 This project is continuing from RP3 with no proposed change in cost or scope. The purpose of the project is to replace the VCS systems at Ballycasey and Shannon tower along with the associated professional services required to commission all three systems. This is part of a broader VCS replacement scheme which also included VCS installations at Cork and Dublin during RP3. A VCS is a set of equipment enabling its users (air traffic controllers and support staff) to initiate, receive, attend to, and maintain communication over radio or telephone. This project is needed as no technical support will be available for the current voice communications switch in the medium to long term.

15.137 In RP3 AirNav Ireland provided a business case that included a high-level overview of the different costs associated with this project. An excel file of project costs was also provided, providing a detailed description of the costs associated with this project.

15.138 The asset life set for RP3 for this project was 8 years.

RP4-NETW-02 Next Generation Intruder Detection System (NGIDS) Phase 2- Proposed cost €0.5m

15.139 This project will implement Next Generation Intrusion Detection System (NGIDS) capability across the ATM functional system. The RP4 project covers the installation at Cork and Shannon.

15.140 The primary driver of this project is compliance with NIS (Network and Information Systems) directive and clause D.010 of (EU) 2017/373 concerning cyber security in aviation which requires ANSPs to "*take the necessary measures to protect their systems. and prevent compromising the network*

against information and cyber security threats".[70]

15.141 AirNav Ireland has based the cost proposal on IDS costs at Dublin and Ballycasey.

RP4-NETW-01 Fibre Remotes - Proposed cost €2.25m

15.142 This project will deliver alternate and diverse fibre feeds to three of AirNav Ireland's remote sites Doon, Wick Hill and Mt. Gabriel. The secondary paths for remote AirNav Ireland sites supporting ATM radar and VCS transport are currently based on Microwave Radio system technology which AirNav Ireland says is susceptible to failure during extreme weather events. The main benefit of the project is identified as greater network stability to support safe operation of ATM services.

15.143 In its Business Plan, AirNav Ireland states that it anticipates significant operational benefits to arise from implementing the fibre cables as opposed to the old microwave system. It has further confirmed to us that adding fibre to remote sites would protect service provision from adverse weather events which cause outages that are slow to recover from. It states that microwave links have been identified as a weakness in its infrastructure during heavy rainfall and wind events.

15.144 There remains uncertainty around the cost proposal at present as the estimate is currently under review by AirNav Ireland. The ANSP has committed to providing us with updated costings when they become available.

15.145 The proposed asset life of 8 years is considerably shorter than what we would expect for fibre feeds and thus propose an asset life of 20 years which is consistent with the asset life we previously set at Dublin Airport for a similar asset.

RP4-NETW-03 2028 Nokia Refresh- Proposed cost €2.5m

15.146 This project is an upgrade to the NOKIA system which was procured as part of an RP2 project. The NOKIA system was introduced in 2018 and will reach end of life by the end of RP4. The NOKIA Service Aggregation Routers (SAR) deliver the IP Backbone for ATM services for delivery of radar and voice comms. AirNav Ireland has said that after 10 years in use, the system needs to be upgraded. The project will cover both core system upgrades at ATC centres and access system upgrades at remote sites.

15.147 There remains some uncertainty around the cost proposal at present as AirNav Ireland is conducting a review of costings. We have requested that the updated costs be provided when available.

15.148 The proposed asset life of 8 years is reasonable for an upgrade given the underlying system will have been operational for 10 years by the time the

[70] EU 2017/373

refresh is delivered.

U008 Independent IP Network - Proposed cost €0.5m

15.149 The purpose of this minor project is to establish an independent IP network that will mitigate the loss of the Nokia Backbone and support ongoing safe operation of the operational COOPANS, VCS and CASDS systems. The aim is to provide additional operational resilience to mitigate the risk of equipment failure on the Nokia Backbone and/or cyber-attack on the Nokia Backbone, supporting safe continuous operation of COOPANS, VCS new CASDS systems. While we asked AirNav Ireland to provide evidence of the stated obsolescence, nothing further has yet been provided.

15.150 A similar project was completed in RP3 relating to the main IP Network rollout (NOKIA) which is complete – this project is for a separate IP network. The primary aim of this project is to provide robustness and resilience to COOPANS and CASDS and deliver enhanced cyber resilience.

15.151 The tender phase to deliver this project has not begun yet, which will determine the exact pricing. AirNav Ireland did not yet provide us with any further information on how the cost estimate for this proposal was developed. A significant amount of uncertainty therefore remains around this minor investment.

15.152 The proposed asset life of 8 years is reasonable and in line with a similar IP Network project in RP3.

V008 ERIN - Proposed cost €0.9m

15.153 This project is continuing from RP3, although the cost estimate has been revised upwards significantly from €0.3m. AirNav Ireland has not yet provided us with an explanation on what has driven the cost increase. The project is expected to complete 2025.

15.154 ERIN is a private international network between NATS UK and AirNav Ireland supporting exchange of surveillance, comms and messaging services between the service providers. This project was established in response to Vodafone's decision to end their provision of E1 product services to AirNav Ireland & NATS. The purpose of this project is to acquire and test new E1 circuits, as well as to seek safety approval, and to implement the new technology. The key driver for this project is business continuity.

15.155 The project will migrate services from ERIN to the new pan-European network service (NewPENS) during 2024. In addition, NATS and AirNav Ireland will contract a replacement International IP network as a backup to the PENS.

15.156 AirNav Ireland's Business Plan sufficiently demonstrates the need for this project given the withdrawal of services from the existing provider though there remains uncertainty around the cost efficiency given the proposed €600k increase.

15.157 The proposed asset life of 8 years was set in RP3.

W005 ISMS (Information Security Management System) - Proposed cost €1.2m

15.158 This proposed project is continuing from RP3. Regulation 203/2023 requires AirNav Ireland to build an Information Security Management System (ISMS) to be implemented by February 2026. The regulation also imposes a requirement to analyse 'events' that may potentially impact the safe performance of the ATM system - requiring AirNav Ireland to implement a Security Incident Event Manager (SIEM Solution). This project is mandated by changes to EU legislation and so the Business Plan demonstrates the need for security management systems that meet these standards.

15.159 While the total cost proposal has not changed since RP3, there has been a significant change in the cost estimate for the SIEM system, which AirNav Ireland provided an investment appraisal for in RP3. AirNav Ireland could not yet provide us with additional material to support the increase in cost nor was any cost information on the ISMS available. The cost estimate of €1.2m appears therefore to be rather uncertain.

15.160 The asset life of 8 years from RP3 is retained.

Z007 Nokia Resilience- Proposed cost €0.63m

15.161 This project is to provide for equipment which will support better reporting and analysis, which AirNav Ireland states is driven by requirements under EU Regulations 2017/373 and 2023/203. AirNav Ireland is introducing this project due to what it sees as heightened regulatory oversight under the above-mentioned regulations which will require increased evidence supporting safety when implementing change in the network.

15.162 The project will deliver a separate Nokia footprint in Ballycasey to support Terminal Services (Cork and Shannon), replace Network Monitoring and Management Servers, introduce a Nokia firewall for additional security and a remote access test system. Additional resilience on the Nokia network enhances AirNav's strategy to move off the obsolete backbone network.

15.163 AirNav Ireland provided us with an investment appraisal for this project which records a total investment amount of €0.7m as opposed to the Business Plan proposal of €0.63m. AirNav Ireland has explained the basis of the small change.

15.164 The proposed asset life of 8 years is in line with a similar RP3 project.

Z001 COOPANS TopSky ATC One Platform Upgrade- Proposed cost €54.9m*

15.165 This flagship project for AirNav Ireland will provide for a new ATM system which will enable longer term SES alignment and compliance with CP1. The system is being procured via the COOPANS alliance. COOPANS is a partnership between AirNav Ireland and five other ANSPs, as well as the ATM systems supplier, Thales, for the delivery of ATM systems and functionality intended to steadily enhance safety and productivity. The apportionment of cost is usually

equally shared by each partner. The partners do not opt-in/out on individual builds but have agreed to collectively implement all of the builds.

15.166 AirNav Ireland has provided a detailed business case for this project, which includes a breakdown of cost estimates, the improvements expected from the new ATM system, an options analysis in terms of functionalities and delivery, and a detailed risk assessment. This analysis concludes that procuring via the COOPANS alliance is the most cost-effective option. In its Business Plan, AirNav Ireland states that procuring through the COOPANS alliance has resulted in cost savings of 30%, which we understand relates to an analysis carried out a number of years ago.

15.167 The material provided outlines how the investment is driven by the need to address obsolescence of the current ATM system which has been operational for 17 years, ensure regulatory compliance, align with European initiatives, enhance resilience, increase capacity, and improve productivity. AirNav Ireland says that a new ATM system needs to be procured given the age of the existing system and its limited capabilities to enable longer term SES alignment. CINEA funding is expected to contribute to the costs of the project, which has been taken into account in the cost estimates.[71]

15.168 **CP1 Compliance:** Modernisation is necessary to achieve CP1 compliance and will bring COOPANS partners in line with the European ATM Masterplan. The upgraded TopSky ATC One system will incorporate features and capabilities that better align with CP1 and future requirements and standards, such as CP2. Given that the upgraded system is a unified solution (rather than bespoke as in the current case), it will streamline compliance with future standards such as software quality, and security regulations, as it makes adherence to these advanced requirements more manageable.

15.169 **ATM Masterplan Alignment:** AirNav Ireland has outlined that TopSky ATC One will ensure that COOPANS is in alignment with Single European Sky vision, allowing it to actively collaborate with SESAR and secure funding to develop key capabilities in future iterations of the TopSky ATC One system.

15.170 The material provided lays out the benefits of this investment across the four KPAs, which can be summarised as follows:

- **Safety:** The new system will allow for increased automation and advanced cyber security, which is operationally safer, and more resilient.

- **Environment:** The new system will facilitate more environmentally efficient flight profiles and, in line with the ATM Masterplan, will focus on strategic de-confliction and coordination.

- **Cost-efficiency:** The shift towards modern, open architecture allows for new features such as Automatic Speech Recognition, Alternate Trajectories, and Conflict Resolution Advisories to be added which

[71] https://cinea.ec.europa.eu/index_en

future-proofs the system, potentially reducing the upgrade costs. The automation of routine tasks increases ATCO productivity**.**

- **Capacity:** The proposed investment will relieve current system capacity limitations and increase controller productivity enabling additional ATC capacity.

15.171 On the basis of the material provided, as set out in Section 6, we propose to allow for the assumed costs of this project in full for RP4. We have also sought to make an internally consistent set of determined cost assumptions, assessing that ATCO productivity will improve during RP4 as a result of investments in the ATM system, which, as noted in Section 4, is currently driving a degree of variance with AirNav Ireland's ATCO staffing forecasts in the latter half of RP4.

15.172 AirNav Ireland has proposed an asset life of 8 years for the project. It is stated in the business case that TopSky ATC One will become operational in 2028 and covers 8 years operational use (up to 2035). We note that this asset life is the same as those used for the COOPANS builds. In that context, it is surprising that an investment of this scale in a completely new ATM system is expected to also have a useful life of just eight years. The business case submitted by AirNav Ireland references that the current system has been in use for over 17 years.

15.173 We have used the suggested asset life of 8 years for the Draft Decision but will consider this further ahead of the Final Decision, in particular to understand the exact nature of the asset being capitalised within RP4.

R035 I-ATS – Proposed cost €0.7m

15.174 In RP3, AirNav Ireland introduced an Integrated Air Traffic System (I-ATS) at the new Dublin Airport control tower. Airport Collaborative Decision-Making (A-CDM) trials with Eurocontrol have identified a number of A-CDM issues, which need to be rectified to enable the system to be fully A-CDM compliant. This project is intended to deliver software updates to the I-ATS system and A-CDM compliance.

15.175 Asset life of 8 years is reasonable based on other similar software projects.

R017 Simulator- Proposed cost €0.4m

15.176 In RP3, a new tower I-ATS Electronic Flight Strip (EFS) simulator for Dublin was required to replace the old EFS simulator which is now obsolete. This minor project covers the electronic flight strip functionalities used for training of Dublin TWR, Dublin GND and Clearance Delivery Service (CDS).

RP4-FDPS-01 Smart Messenger- Proposed cost €1.5m

15.177 The project will deliver upgrades for enhanced security and compliance to the Aeronautical Fixed Telecommunication Network (AFTN)/Aeronautical Message Handling System (AMHS) which is used globally to distribute flight plan data. The system is also used to distribute aeronautical information and aviation MET

data. This project will deliver security updates to the system in 2026 and replace hardware at the end of RP4.

15.178 There is significant uncertainty around the cost estimate for this project and AirNav Ireland was not in a position to provide us with a supplier quotation for the upgrades ahead of the Draft Decision.

15.179 We find the proposed asset life of 8 years consistent with a similar project in RP3.

RP4-FDPS-02 Aeronautical Information Management (AIM) System Upgrade- Proposed cost €1m

15.180 Aeronautical Information Management (AIM) ensures that accurate and up-to-date information is available to pilots, air traffic controllers, and other aviation professionals. This project is to provide software upgrades and replace hardware to facilitate the migration to the Eurocontrol eEAD system.

15.181 AirNav Ireland says that the AIM office requires a system upgrade due to the CP1 regulation, regular security updates and hardware replacement are also required due to hardware obsolescence. The need for this project is driven by AirNav Ireland's obligation to meet the CP1 mandate for aeronautical information to be published by eEAD. The upgrade of the AIM client system will enable this migration to the Eurocontrol eEAD system.

15.182 AirNav Ireland has said that the cost estimate is based on previous AIM system upgrades and hardware prices but did not provide us with any of the relevant historic prices. While the need for the project is driven by regulatory compliance, the cost basis is less clear.

15.183 The proposed asset life of 8 years is reasonable and consistent with other similar projects.

RP4-FDPS-03 Centralised Monitoring System (CMS) System Upgrade- Proposed cost €0.9m

15.184 The Centralised Monitoring System (CMS) integrates a number of monitoring systems from AirNav functional systems to provide a reduced number of Human Machine Interfaces (HMIs) at the technical control desk. This project will deliver a hardware replacement and software refresh during RP4.

15.185 In response to our question on the stated need for the upgrades, AirNav Ireland asserted that some of the current hardware has been in place for over 10 years and upgraded hardware will be necessary to support the planned firmware and software upgrades.

15.186 AirNav Ireland has said the cost estimate is based on previous CMS system upgrades and hardware prices but has not yet provided any of the relevant historic prices.

15.187 The asset life of 8 years is reasonable for a project of this nature.

RP4-FDPS-04 CASDS Refresh- Proposed cost €4.5m

15.188 The Contingency Air Situation Display System (CASDS) is a contingency ATM system to be used in the event of a major failure of the COOPANS system. As per the associated project outlined below, the old Emergency Air Situation Display System (EASDS) will be replaced during RP4 by CASDS, and the purpose of this project is to refresh that new CASDS towards the end of RP4 to cater for security and regulatory amendments, and to maintain the system. The project will deliver an upgraded/refreshed CASDS ATM system in Dublin ATCC, Dublin tower, Ballycasey ATCC, Cork tower, Shannon tower and CEROC contingency centre.

15.189 We asked AirNav Ireland to further explain the need for such a significant upgrade project two years after a new underlying system is expected to be delivered (CASDS). It stated that potential suppliers were not able to provide a system complete with all the necessary requirements. AirNav Ireland elected to take the initial system as early as possible with the remaining critical component to be provided subsequently.

15.190 We also asked whether the TopSky ATC One system would not itself have inbuilt redundancy. AirNav Ireland stated that while the planned new ATM system does have high levels of built in redundancy to provide resilience against predictable hardware and/or software failures, AirNav Ireland will still rely on a functioning CASDS system to be activated in the event of failure of the COOPANS system.

15.191 It appears based on initial responses from AirNav Ireland that the refresh involves the addition of a critical feature that would have delayed the initial delivery of the CASDS system. It is currently not clear to us, based on the material and response we have received from AirNav Ireland, whether it is likely that all of this will be delivered in RP4, however, as noted in Section 6, we propose to take account of such issues by making a programme level adjustment rather project-level.

15.192 We find that the proposed asset life of 8 years is reasonable.

RP4-FDPS-05 I-ATS Enhancements including CP1 & Hardware- Proposed cost €2m

15.193 The Integrated Air Traffic Service (I-ATS) System in Dublin tower ATM System was commissioned as an enabler for the opening of the parallel runway in Dublin Airport in August 2022. AirNav Ireland says the system now requires upgrades for compliance, enhanced security, and hardware obsolescence.

15.194 We asked AirNav Ireland to further elaborate on the need to upgrade the system, given that it was installed in 2021, and to explain what CP1 functionalities this project relates to. It has responded that the current operating system has reached end of life and is no longer supported. The hardware upgrade is necessitated by the need to support the new operating systems. The CP1 functionalities are the consumption of SWIM services (FF-ICE, Digital Notam, AIF, MET IWXXM). The AIM system upgrades enable the provision of

the Aeronautical Information (AIF, Digital Notam) which will be then consumed as SWIM services.

15.195 AirNav Ireland did not provide us with any calculations or prices of previous I-ATS system upgrades or hardware prices which it said informed the cost estimate for this proposal which leaves a degree of uncertainty around the current cost estimate.

15.196 The asset life of 8 years is reasonable.

RP4-FDPS-06 IWXXM to TAC Conversion Tool- Proposed cost €0.5m

15.197 Met Eireann will move from using the TAC format of MET messages at the end of 2026 to IWXXM. MET Eireann will continue to provide TAC messages until the end of 2027. This project is required to convert IWXXM MET messages to TAC in the interim period before the new ATM system becomes operational in 2029.

15.198 The project is likely necessary given MET's transition to IWXXM and the new COOPANS TopSky ATC One system will not be operational until 2029.

15.199 The proposed asset life of 8 years is reasonable for a hardware/ software project of this kind.

*U002 COOPANS Roadmap Builds (Dublin and Shannon) *- Proposed cost €8m*

15.200 This major project, which is continuing from RP3 with no change in cost, provides for the next round of COOPANS builds, intended to provide further functionalities to the ATM systems to enhance efficiency and safety. The project will deliver new releases of the COOPANS platform including new software and hardware at Dublin and Shannon. A key driver of this project is that it will facilitate compliance with SWIM requirement under CP1.

15.201 Given the significant investment involved with the delivery of the TopSky ATC One system, we asked AirNav Ireland how the other COOPANS builds interrelate with the new ATM system, whether the two projects can be progressed together, and if these builds will only relate to the legacy system. AirNav Ireland said that the COOPANS roadmap developments are almost all aimed at the proper maintenance of the current ATM system, relating to the interim period until the transition to ATC One is delivered. The evolution of the SWIM interface is nonetheless required to meet regulatory requirements. We note that evolutions affecting ATCO functionality (e.g. Downlinked Barometric Pressure Setting Monitoring (DBPSM)) are then expected to be reconciled into the ATC One system at no extra cost to the ANSP.

15.202 Ahead of the Draft Decision we asked AirNav Ireland to provide us with a more detailed cost breakdown of the Dublin and Shannon locations. This cost detail has not been provided by AirNav Ireland, and we note that the final costs are not yet certain.

15.203 The 8-year asset life set for the project in RP3 is retained.

U003 Contingency Air Situation Display System and Simulator for Dublin and Shannon (CASDS)- Proposed cost €9.5m*

15.204 The purpose of this major project is to replace the current Emergency Air Situation Display System (EASDS), which was introduced into operational service in 2008. As noted above, the EASDS is used as a contingency ATM system in the event of a major failure of the COOPANS system. The project was included in RP3 but has been delayed. The existing system is stated to be at a replacement age, which is reasonable given that it has been in service since 2008.

15.205 The new system will be installed in Dublin ATCC, Dublin tower, Ballycasey, Cork tower, Shannon tower and CEROC contingency centre. The scope includes a provision for a simulator rig to allow for enhanced training and will also deliver new servers, workstations and network hardware and software at all sites. It will also include in-built system redundancy.

15.206 This project was proposed at RP3, and has since been revised with a higher cost proposal from the original €6.5m. AirNav Ireland has stated that the increase in cost can be attributed to recent high inflation, the low number of ATM suppliers in the market and the additional considerations factored into the project to account for regulations which are due in the coming years. The cost estimate included in the Business Plan was informed by consultation with COOPANS partners on their past purchases. Shortly before publication of this Draft Decision, AirNav Ireland has provided us with detailed procurement material which we will review ahead of the Final Decision.

15.207 The key drivers for this project are therefore to ensure business continuity by providing a back up to the COOPANS system and to ensure compliance with CP1 regulations.

15.208 We note that AirNav Ireland uses an asset life of 8 years. Similar to TopSky ATC One, it is surprising that a new system installation such as CASDS would be depreciated over the same asset life as is anticipated for refreshes of, or supplementation to, the same system. Further, given the outturn operational life of the current system, we find that a useful life of 8 years is likely too short for this system. For the time being, we have retained the RP3 asset life of 8 years for the Draft Decision but may revise this upwards in the Final Decision unless substantiation for the asset life assumption of 8 years can be provided.

RP4-OPS-01 FMP/AMC Function- Proposed cost €0.2m

15.209 A Flow Management Position (FMP) is responsible for the efficient management of airspace, largely through the monitoring of traffic volumes, applying regulations (flow control) or short-term ATM measures (STAMs) where required, and the coordination of these measures with the Eurocontrol Network Manager. This is governed by EU Regulation 255/2010.

15.210 The Airspace Management Cell (AMC) is a state function in accordance with EU Regulation 2150/2005, which is responsible for the management of segregated airspace/Flexible Use Airspace (FUA). The FMP and AMC

functions for Ireland are currently provided by NATS through their UKFMP position. The AMC function is now required to be provided by AirNav Ireland, and EU Regulation 255/2010 recommends that FMP and AMC functions are collocated. AirNav Ireland is pursuing this project to ensure compliance with regulations Network Functions 123/2019, ATFM 255/2010 and Flexible Use Airspace (FUA) Policy 2150/2005.

15.211 This minor project is to fund training and purchase of equipment for the delivery of the AMC/FMP functions in Ireland by AirNav Ireland. Work is already underway with AirNav Ireland appointing a project manager to oversee its delivery and staff training plans have been developed.

15.212 The project will involve the purchase of ICT equipment and desks needed for staff to carry out the FMP/AMC functions. An asset life of 8 years is likely too long for ICT assets, e.g. mobile phones and laptops. We propose an 8-year asset life for the desks/workstations and 3-5 years for remaining ICT equipment.

RP4-OPS-02 ASMGCS Cork & Shannon - Proposed cost €12m*

15.213 Advanced Surface Movements and Guidance Control System (ASMGCS) is a system used at airports to provide routing, guidance and surveillance for the control of aircraft and vehicles. This project is to deliver the infrastructure and technology to provide A-SMGCS at Cork and Shannon Airports. It is already in place at Dublin Airport.

15.214 AirNav Ireland notes that the project will enhance safety at Cork and Shannon airports by assisting in the prevention and early detection of Runway incursions, taxiway incursions, as well as improving the ATCOs overall situational awareness of aircraft and vehicle movements. Along with safety, the stated primary aim of this project is to align with one of the Strategic Objectives in the updated Master Plan (SDO#1) which concerns the reduction of collision risks on taxiways and runways.

15.215 AirNav Ireland provided a detailed response to our follow up questions, which outlined the motivation for this project and the role such technology plays in assisting in the early detection and prevention of runway incursions. We note that runway incursions represent a significant safety risk, and the rate of runway incursions and any associated trends are monitored as part of the monitoring of safety PIs. As AirNav Ireland has stated, and as reflected in the annual NSA monitoring reports, a low but persistent level of runway incursions have happened at Cork and Shannon airports over the past 10 years. Introducing ASMGCS will provide enhanced situational awareness to ATCOs and flight crew, allowing for declared traffic rates in all weather conditions while maintaining safety.

15.216 AirNav Ireland also reference the European Plan for Aviation Safety, the European Plan for the Prevention of Runway Incursions and Regulation (EU) 2017/373, which all advocate for technology that can improve situational awareness and ensure safe movement of aircraft.

15.217 While the need for and benefits of the project is clear, the underlying basis for the cost estimate is less clear. We requested Order of Magnitude costings from AirNav Ireland or an explanation from where the cost was derived but this has not yet been provided.

15.218 The 8-year asset life proposed by AirNav Ireland is slightly below what we would expect for infrastructure of this nature. Upgrades were delivered to the ASMGC system at Dublin Airport during RP3 as some components of the system had reached obsolescence since their installation over 10 years previous. We are therefore proposing an asset life of 10 years for the new underlying ASMGCS at both Cork and Shannon airports.

RP4-OPS-03 Pavilion Dublin Contingency ACC -Proposed cost €6m*

15.219 This facility will provide Dublin Operations with an alternative site to provide Air Traffic Services which is independent of the Dublin ATCC and will remove the requirement for 'Dublin in Shannon' contingency operations. This project will involve implementing the necessary resources for 14 operator positions at Pavilion Dublin Contingency ACC. The centre will be equipped with TopSky ATC One, CASDS, IATS, Frequentis Main VCCS, MEP backup comms, MDP system, ANEMOs, IRVRs, ILS RSI and clock information.

15.220 The Shannon ACC is the current contingency facility for events which would require the evacuation of the ACC building in Dublin. It can provide a service of up to 50% of the maximum capacity and requires 24 hours to be made operational. AirNav Ireland says the opening of the new control tower in Dublin has provided a suitable location to house the Dublin ACC contingency facility in the pavilion building and this will significantly reduce the time needed to make it operational and maximise the amount of traffic that can be safely handled in Dublin (in the event of an evacuation).

15.221 AirNav Ireland has not provided us with any further information underlying the cost estimate for this project. AirNav Ireland does not expect to capitalise this project during RP4 as the new facility will not be complete and fully operational until RP5 when the full project will be capitalised. Hence the project is not actually included within the determined costs for RP4.

RP4-OPS-04 Shannon & Dublin ACC Console Replacement- Proposed cost €1.5m

15.222 This project involves a replacement of all working positions in the Shannon En Route and Dublin operations room, on the grounds that the current equipment no longer meets modern health and safety standards. We note that the existing consoles have been in place since 2003.

15.223 The cost estimate is based on costings received for height adjustable desks (with an inflation assumption). Cabling costs have been estimated from previous cabling tasks. AirNav Ireland has not yet addressed our request for further detail on these costings.

15.224 The proposed asset life of 8 years is shorter than what we would expect for this

equipment given that the current consoles have been in operation for 20 years now. We propose an asset life of 10 years.

Project Summary table

15.225 Table A1 below provides an overview of all proposed AirNav Ireland RP4 capital projects. Included in the table is AirNav Ireland's proposed cost for each project, their estimated asset life for each project, and the asset lives proposed by the NSA. As noted in Section 6, we propose to include all proposed projects at the cost estimates provided by AirNav Ireland, but then make an overall 20% downward adjustment to the programme, applicable across all projects except TopSky ATC One.

Table A1: Summary of RP4 Capital projects

Project	AirNav Ireland Proposed cost	AirNav Ireland Asset life	IAA Asset life
Ballycasey Building Extension*	€12.2m	20 years	25 years
Dublin ATC Building Extension/ Separate Building*	€7.5m	20 years	25 years
Malin Head Radar Building Replacement*	€6m	20 years	40 years
Flood Mitigation Works CEROC	€4m	20 years	20 years
Plant Upgrade Works	€4m	15 Years	15 Years
Upgrade of Energy MIC	€2m	20 years	20 years
Cork ATC Extension	€3.5m	20 years	25 years
Conditional Survey Works	€2m	8 years	20 years
Plant Upgrade Works	€2m	15 years	15 years
EV Charging Installations	€0.5m	15 Years	15 Years
ATC Chairs	€0.4m	5 years	5 years
Security systems and equipment upgrade works	€4.99m	8 years	10 years
ICT security project	€0.4m	3 years	3 years
ICT Infrastructure Life Cycle Management & Compliance	€4.85m	3 Years	3 Years
Air Traffic Control Centre (ATCC) Generators & Switchgear	€0.7m	8 years	8 years
Modular Uninterrupted Power Supply (UPS) supporting TopSky	€0.85m	8 years	8 years
National Clock Systems	€0.15m	8 years	8 years
Radar Upgrade Phase 2*	€22m	12 years	12 years
Surveillance Data Distribution System (SDDS) & Rec	€0.15m	8 years	8 years
ARTAS and SASS-C	€0.9m	8 years	8 years
BMS Upgrade Dublin/ Ballycasey	€0.5m	8 years	8 years
RADAR Overhaul – Remote Control and Monitoring System (RCMS) Phase 1	€0.4m	12 years	12 years
Generator Replacement Programmes	€0.375m	8 years	8 years
ATC 2Kx2K Screen Replacement	€1.5m	8 years	8 years
NAVAIDS Dublin and Shannon*	€9m	12 years	12 years
Airfield Cabling Replacement	€3m	20 years	20 years
Met Server: SHN, Cork and Dublin	€3m	8 years	8 years

CEROC Midlife Upgrade for CEROC Main R&S VCCS	€2m	8 years	15 years
Communications & Navigation Test Equipment	€0.35m	5 years	8 years
Dublin & BCY CVF VCCS Replacement	€0.75m	8 years	8 years
Doppler VHF Omni Directional Range (DVOR) /Distance Measuring Equipment (DME)	€3m	8 years	15 Years
En route Distance Measuring Equipment (DME)	€2m	8 years	15 Years
MEP EVCS Mid-life SW Upgrade	€1.75m	5 years	8 years
VOIP Skysoft Recording System	€0.5m	8 years	8 years
Voice Communication Switch	€4.5m	8 years	8 years
NGIDS Phase 2	€0.5m	8 years	8 years
Fibre Remotes	€2.25m	8 years	20 years
2028 Nokia refresh	€2.5m	8 years	8 years
Independent IP Network	€0.5m	8 years	8 years
ERIN	€0.9m	8 years	8 years
ISMS (NIS COMPLIANCE)	€1.2m	8 years	8 years
Nokia Resilience	€0.63m	8 years	8 years
COOPANS TopSky ATC One Platform Upgrade*	€54.9m	8 years	8 years
I-ATS	€0.7m	8 years	8 years
Simulator	€0.4m	8 years	8 years
Smart Messenger	€1.5m	8 years	8 years
AIM System Upgrade	€1m	8 years	8 years
CMS System Upgrade	€0.9m	8 years	8 years
CASDS Refresh	€4.5m	8 years	8 years
I-ATS Enhancements including CP1 & Hardware	€2m	8 years	8 years
IWXXM to TAC Conversion Tool	€0.5m	8 years	8 years
COOPANS Roadmap Builds (Dublin and Shannon) *	€8m	8 years	8 years
Contingency Air Situation Display System and Simulator for Dublin and Shannon*	€9.5m	8 years	8 years
FMP/AMC Function	€0.2m	8 years	3-5 years (IT), 8 years desks
ASMGCS (Cork & Shannon) *	€12m	8 years	10 years
Pavilion Dublin Contingency ACC*	€6m		20 years
Shannon & DUB console replacement	€1.5m	8 years	10years
Climate Action Plan - Heating / Cooling Upgrades	€4.8m	15 Years	15 Years
Climate Action Plan – PV Installation	€2.035m	20 years	25 years
Lift upgrade Radiator & Pipe Infrastructure and Low energy lighting	€1.76m		
Radiator (15) & pipe (20)	€0.2m	15 years	15-20 years
Lift upgrade	€0.41m	15 years	25 years
Climate Action Plan –energy lighting	€1.15m	8 years	10 years

Source: AirNav Ireland, IAA. Note that these are project cost values, thus in some cases, not all of this expenditure will occur within RP4.

** Note: These projects are considered 'major investments' within the meaning of regulation 317/2019*