UK Civil Aviation Authority and Irish Aviation Authority Safety Regulation Division

UK-Ireland FAB RP2 Performance Plan – Supporting Document

June 2014

UK-Ireland FAB RP2 Performance Plan – Supporting Document

Issue 3 - June 2014

INTENTIONALLY LEFT BLANK

Table of Contents

Executive Summary

1. This document forms part of the UK-Ireland FAB Performance Plan for the Reference Period 2 (2015 – 2019) of the Single European Sky (SES) Performance Scheme and **should be read in conjunction with the UK-Ireland FAB Performance Plan in the formal EU template**.

2. The Performance Scheme is a European Union (EU) initiative to improve the performance of Air Navigation Services (ANS) in four key performance areas (KPAs): safety, environment, capacity and cost efficiency. The Performance Plan (PP) includes incentives (bonus, penalty and non-financial) for capacity, environment and cost-efficiency. Due to its overriding nature, safety is not subject to incentives.

UK and Ireland Targets for RP2

Safety

3. Safety targets for the UK-Ireland FAB have been set for three key performance indicators (KPIs) - effectiveness of safety management (EoSM), application of the severity classification based on the Risk Analysis Tool (RAT), and Just Culture (JC).

Figure 1: FAB safety targets

		2015	2016	2017	2018	2019
EoSM	NSAs	-	-	-	-	Level C ('Implementing') for all Management Objectives
	ANSPs	-	-	-	-	Level C for Safety Culture Management Objective and Level D ('Managing & Measuring') for remaining Management Objectives
RAT	SMIs	-	-	80%	80%	100%
	RIs	-	-	80%	80%	100%
	ATM-S	-	-	80%	80%	100%
JC	NSAs	Joint UK-Ireland JC Policy Statement adopted JC training requirements at NSA level and joint review of the results of the annual JC survey to identify further areas for improvement on an ongoing basis				
	ANSPs	Joint JC training requirements at ANSP level				

4. The proposed UK-Ireland FAB targets for EoSM and RAT are consistent with EU wide targets; targets for JC have been established at the Functional Airspace Block (FAB) level.

Capacity

5. The capacity KPA includes two KPIs - FAB en route air traffic flow management (ATFM) delay per flight; and terminal and airport ANS ATFM arrival delay per flight. The UK intends to adopt additional national capacity incentives in line with those adopted in RP1 (2012 - 2014).

Figure 2: FAB en route capacity target

(mins delay/flight)	2015	2016	2017	2018	2019
EU wide target	0.50	0.50	0.50	0.50	0.50
FAB reference value	0.25	0.26	0.26	0.26	0.26
FAB target	0.26	0.26	0.26	0.26	0.26

Figure 3: Terminal capacity targets

(mins delay/flight)	Average/Range 2015-2019
UK	0.87 (2015), 0.78 (2016-19)
Ireland	0.18-0.22

6. The proposed UK-Ireland FAB target for capacity (en route ATFM delay) is consistent with the EU wide target and associated indicative FAB reference value in 2016-2019.

Environment

7. The environment KPA includes two KPIs - horizontal en route flight efficiency of the actual trajectory (KEA) - applicable at FAB-level; and horizontal en route flight efficiency of the last filed flight plan (KEP) - applicable at the Network Manager level and not considered in this document.

Figure 4: FAB KEA target

	2015	2016	2017	2018	2019
EU wide target	-	-	-	-	2.66%
FAB reference value	3.36%	3.27%	3.18%	3.09%	2.99%
FAB target	3.36%	3.27%	3.18%	3.09%	2.99%

8. This means an average of 2.99% route extension in actual trajectory by 2019, decreasing from 3.36% in 2015.

9. The proposed UK-Ireland FAB target for environment (en route horizontal flight efficiency, actual trajectory) is consistent with the EU wide target and associated indicative FAB reference value.

10. The UK also intends to adopt additional environmental KPIs relating to vertical and horizontal flight efficiency and implementation of a harmonised transition altitude (TA) of 18,000 ft. The CAA also intends to hold NERL accountable for the delivery of key elements of the Future Airspace Strategy (FAS) through the NERL Licence.

Cost Efficiency

11. The cost efficiency KPA includes two KPIs - the determined unit cost (DUC) for en route ANS; and the DUC for terminal ANS. The baseline year for real costs is 2014. The price base for real costs is 2012.

12. The UK cost efficiency targets are set out in Figure 5 and 6 below. These represent an annual rate of reduction in the real determined cost (DC) of 3.0% and the real DUC of 4.7%.

Figure 5: En route cost efficiency target UK

	2015	2016	2017	2018	2019
DC nominal (£000)	£686,096.0	£686,856.9	£689,731.6	£682,288.3	£672,799.2
Inflation index	106.5	108.5	110.7	112.9	115.2
DC real (£000)	£644,287.4	£632,975.4	£623,161.4	£604,349.5	£584,259.2
Total Service Units (000)	10,244	10,435	10,583	10,758	10,940
Real DUCs	£62.89	£60.66	£58.88	£56.18	£53.41

13. The proposed UK target for en route cost efficiency (4.7% DUC reduction pa) is significantly more challenging than the EU wide target (3.3% DUC reduction pa).

Figure 6: Terminal Zone B cost efficiency target UK

	2015	2016	2017	2018	2019
DC nominal (£000)	£143,249.3	£145,635.0	£148,818.5	£151,328.5	£153,751.6
Inflation index	106.5	108.5	110.7	112.9	115.2
DC real (£000)	£134,461.2	£134,151.6	£134,396.2	£133,983.3	£133,459.4
Terminal service units (000)	1,153	1,182	1,205	1,230	1,256
Real DUCs	£116.61	£113.50	£111.53	£108.89	£106.22

Figure 7: Terminal Zone C (London Approach) cost efficiency target UK

	2015	2016	2017	2018	2019
DC nominal (£000)	£12,012	£12,371	£12,749	£13,092	£13,399
Inflation index	106.5	108.5	110.7	112.9	115.2
DC real (£000)	£11,280	£11,401	£11,519	£11,597	£11,636

Terminal service units (000)	885	906	922	940	959
Real DUCs	£12.75	£12.59	£12.49	£12.34	£12.14

14. Ireland, and in particular the Irish Aviation Authority (IAA), has consistently been one of the strongest performing States in Europe with the en route unit rate being one of the lowest amongst the 37 EUROCONTROL Member States. In RP1, Ireland contributed to the achievement of the European cost-efficiency targets through a significant reduction in its unit rate. In RP2, the IAA plans to again deliver on cost-efficiency targets, resulting in progressive unit reductions over the course of the reference period.

15. The Irish cost efficiency targets are set out in Figure 8 and 9.

Figure 8: En route cost efficiency target Ireland

	2015	2016	2017	2018	2019
DC nominal (€000)	€118,729.4	€122,039.4	€126,193.5	€129,913.4	€131,301.7
Inflation index	102.22	103.44	104.89	106.67	108.49
DC real (€000)	€116,163.4	€117,997.9	€120,356.4	€121,803.6	€121,038.5
Total Service Units (000)	3,982.6	4,049.6	4,113.3	4,184.9	4,262.1
Real en route DUCs	€29.17	€29.14	€29.26	€29.11	€28.40

Figure 9: Terminal cost efficiency target Ireland

	2015	2016	2017	2018	2019
DC nominal (€000)	€ 24,604.2	€26,128.1	€26,882.7	€27,666.3	€28,248.4
Inflation index	102.22	103.44	104.89	106.67	108.49
DC real (000)	€24,071.0	€25,258.8	€25,629.4	€25,935.6	€26,038.6
Terminal service units	141,200	144,400	148,200	152,900	156,900
Real DUCs	€170.47	€174.92	€172.94	€169.62	€165.96

Final Plan

16. This document along with the Plan in the formal EU template forms part of the UK and Irish governments' submission of the UK-Ireland FAB Performance Plan to the European Commission and the Performance Review Body (PRB).

CHAPTER 1

Introduction

Purpose of this Document

1.1 This document has been drafted jointly by the national supervisory authorities (NSAs) of the UK and Ireland – the Civil Aviation Authority (CAA) and the Irish Aviation Authority Safety Regulation Division (IAA SRD). It is published to support the UK-Ireland Performance Plan in the formal EU template. The Performance Plan (PP) for the second Reference Period (RP2) is part of the Single European Sky (SES) Performance Scheme for Air Navigation Services (ANS).

1.2 This document is intended to act as a guide to the formal template of the PP. This document provides supporting rationale for the decisions and targets contained therein. It also reports on stakeholder representations received during consultation on the draft Performance Plan and provides a NSA response to issues raised.

1.3 Details on the military dimension, actions to implement the Network Strategy Plan, air navigation service providers' (ANSP) detailed investments, sensitivity to external assumptions, and the monitoring /implementation of the PP are covered in detail in the formal template and therefore not repeated in this document.

Consultation responses

1.4 All responses to the consultation of the draft PP are available on the CAA website[1]. A summary of the representations and the NSAs responses is discussed in Chapter 11.

Structure of the remainder of this document

1.5 The remainder of this document is structured as follows:

- Chapter 1: Introduction

[1] All responses to the consultation of the draft PP are available from: http://www.caa.co.uk/default.aspx?catid=5&pagetype=90&pageid=16033

- Chapter 2: Background
- Chapter 3: Safety
- Chapter 4: En Route Capacity
- Chapter 5: Environment
- Chapter 6: En Route Cost Efficiency UK
- Chapter 7: En Route Cost Efficiency Ireland
- Chapter 8: Terminal Navigation Services UK
- Chapter 9: Terminal Navigation Services Ireland
- Chapter 10: Interdependencies
- Chapter 11: Summary of Consultation Responses
- Appendix A: ANSP business plans
- Appendix B: Just Culture Policy
- Appendix C: Additional UK Capacity Incentives
- Appendix D: UK en route cost efficiency: NERL's Pensions
- Appendix E: UK en route cost efficiency: Cost of capital for NERL
- Appendix F: Revision of the 3Di model
- Appendix G: Abbreviations
- Appendix H: First Economics: IAA cost of capital report

1.6 In addition, the CAA and IAA SRD are publishing the PP submitted for State adoption with annexes in the formal EU template format.

CHAPTER 2

Background

2.1 This chapter provides an overview of the framework, scope, overall assumptions and process of drafting a Performance Plan for the UK-Ireland Functional Airspace Block (FAB).

Framework

The Performance Scheme

2.2 The SES Performance Scheme is an EU initiative to improve the performance of ANS in four key performance areas (KPAs):

- Safety (at FAB level);
- Environment (at FAB level);
- Capacity (at FAB level for en route and national level for terminal services); and
- Cost-efficiency (at charging zone level in local currency).

2.3 The Performance Scheme requires Member States to adopt performance plans in respect of ANS providers over a reference period. These plans must contain local (FAB/national) targets that contribute to and are consistent with EU targets. The first reference period (RP1) runs from 2012 to 2014. In RP1 the focus is on the en route ANS with local targets at the national level only required for en route capacity and cost-efficiency. RP2, 2015 to 2019, takes a more gate-to-gate approach, with targets across all KPAs, "local" targets at the FAB level for safety, environment and capacity and at the charging zone level for cost-efficiency, in addition to target setting for terminal ANS.

2.4 The Performance Scheme is provided for in the SES Framework Regulation[2] with detailed requirements contained in two implementing

[2] Regulation (EC) No 549/2004 of the European Parliament and of the Council of 10 March 2004 laying down the framework for the creation of the single European sky, available from: http://eur-

regulations (the Regulations) published in May 2013 in preparation for RP2:

- Commission Regulation No 390/2013 laying down a performance scheme for air navigation services and network functions[3] - the Performance Regulation; and
- Commission Regulation No 391/2013 laying down a common charging scheme for air navigation services[4] - the Charging Regulation.

2.5 The Performance Regulation requires NSAs to draw up performance plans at a FAB level and hold effective consultations with stakeholders. The CAA and IAA SRD have worked closely to develop the PP.

2.6 The Regulations provide for financial incentives for capacity (mandatory), environment (optional) and cost-efficiency (mandatory, but embedded in the Charging Regulation). There is no incentive scheme for safety.

2.7 Where no financial incentives are set against the targets, alternative actions are required such as corrective action plans with deadlines and associated measures.

2.8 The regulations also provide for optional additional KPIs and targets with financial incentives for capacity and environment where these support performance improvements in these KPAs.

The UK-Ireland FAB

2.9 A FAB is an airspace block based on operational requirements and established regardless of State boundaries (for more information see

lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:2004R0549:20091204:EN:PDF

[3] COMMISSION IMPLEMENTING REGULATION (EU) No 390/2013 of 3 May 2013 laying down a performance scheme for air navigation services and network functions, Official Journal of the EU L 128 p. 1-30, 9 May 2013, available from: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:128:0001:0030:EN:PDF

[4] COMMISSION IMPLEMENTING REGULATION (EU) No 391/2013 of 3 May 2013 laying down a common charging scheme for air navigation services, Official Journal of the EU L 128 pp. 31-56, 9 May 2013, available from: http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:128:0031:0058:EN:PDF

www.ukirelandfab.eu).

2.10 The UK and Ireland intend to continue to develop the FAB through RP2 as a key mechanism to develop SES goals and contribute to the delivery of performance improvements under the four SES KPAs. FAB actions during RP2 will take the form of setting and achieving required targets at the FAB level and some initiatives that will set the future direction of the FAB during RP2 and beyond.

2.11 Following on from lessons learned during the TEN-T funded High Level Sectors project, the UK-Ireland FAB launched a Dynamic Sectorisation Operational Trial (DSOT) on 9 January 2014. Dynamic Sectorisation is the process of tactically switching the provision of Air Traffic Management (ATM) services between the service providers to best utilise the available resources.

2.12 The goal of the DSOT is to prove the concept - a key SES Air Traffic Management Research (SESAR) concept - and gather evidence and information in terms of interoperability, regulatory processes and to gather data on potential cost and operational efficiencies that will benefit airlines.

2.13 In order to ensure the concept is deployed in an optimal manner, DSOT will run over three phases during 2014 and 2015. The output from the trial will be used to inform the FAB on options for the permanent deployment of the concept within FAB airspace. Dynamic Sectorisation will play a key part in the process to implement full Free Route Airspace across the UK-Ireland FAB airspace to deliver operational, environmental and cost efficiency enhancements to airspace users.

2.14 To achieve the full implementation of Dynamic Sectorisation, NATS will need to deploy enhanced flight data processing (FDP) and workstation capability through the iTEC collaboration[5], planned to start in 2016. During 2015 the IAA will adapt its COOPANS[6] system to

---

[5] The iTEC collaboration brings together the air navigation service providers of Spain (AENA), Germany (DFS), the UK (NATS) and the Netherlands (LVNL) alongside systems provider INDRA.

[6] The COOPANS collaboration brings together the air navigation service providers of Ireland (IAA), Sweden (LFV), Denmark (Naviair), Austria (Austro Control) and Croatia (Croatia Control) (Austria) alongside systems provider Thales.

provide similar capability. The timing of the trial will ensure that evidence gained from the operation of the concept is available in time to make decisions on next steps as quickly as possible so as to take advantage of the technology upgrades.

2.15 The UK-Ireland FAB submitted an Implementation Plan to the European Commission on 30 November 2013 in response to EU pilot pre-infraction proceedings on the FAB. In the Implementation Plan, the FAB committed to a set of milestones for the trial and to the generation of a roadmap for the introduction of the concept into operational use.

2.16 If the trial shows the concept to be operationally and technically feasible, and demonstrably able to deliver net benefits to airspace users, the intention is to update the Implementation Plan to lay out some additional milestones to generate the aforementioned roadmap as soon as is practicable, in order that full implementation can begin before the end of RP2.

2.17 The UK-Ireland FAB was set up on a design and build concept based on the two ANSPs working in collaboration to optimise the FAB airspace. The approach has been successful, and the FAB partners will continue to collaborate. However it is approaching the limits of what can be done within the concept of 'design and build'.

2.18 Therefore during RP2 the FAB is committed to looking at all options for the FAB's future including possibilities for greater cooperation. To this end both States asked the NSAs and ANSPs to develop some initial options for discussion.

Scope

2.19 The PP covers:

- En route services in the Shannon, Scottish and London Flight Information and Upper Information Regions (FIR/UIR). It does not include Shanwick Oceanic airspace.
- Terminal services provided at airports in the UK and Ireland with more than 70,000 instrument flight rules (IFR) movements per annum. Cork and Shannon (below 70,000 IFR) airports will be included for the Irish terminal cost efficiency target but not for any other KPIs.

Stakeholders

2.20 Whilst the focus of the Performance Scheme is ANS, the regulations necessarily place requirements on a number of actors across the ATM system:

- ANSPs (en route, terminal, MET and the Network Manager);
- Air transport operators;
- Airports;
- Airport coordinators;
- NSAs; and
- Member States.

2.21 For Ireland both en route and terminal ANS is provided by IAA ANSP. For the UK en route ANS is provided by the NATS En Route PLC (NERL) whilst terminal services at most of the airports in scope are currently provided by NATS Services Limited (NSL). One airport, Birmingham is in the process of moving to self supply of terminal services and (all) the other airport terminal ANS contracts are expected to be subject to review and commercial tender processes during the course of RP2.

2.22 The PP also covers the other elements of the national unit charges levied on airlines: MET services provided in Ireland by Met Eireann, and in the UK by the UK Met Office, the relevant NSA costs of the CAA and IAA SRD, and the national shares of EUROCONTROL agency costs.

2.23 The PP does not cover the costs of Shanwick Oceanic services provided by UK and Ireland to flights over the eastern Atlantic in high seas airspace operated under a mandate from ICAO outside the scope of the SES legislation[7].

2.24 The PP also includes a Military dimension which covers the civil-military cooperation under the Flexible Use of Airspace (FUA) legislation. This is discussed in detail in the PP template (section 5 and Annex E).

---

[7] The UK will be consulting separately on its charges for Oceanic services for the next five years.

Process

2.25 The NSAs were required to draw up performance plans at FAB level, supported by ANSPs providing their business plans, and stakeholder consultation on plans.

2.26 See details on the stakeholder representations on the draft Performance Plan and NSA responses in Chapter 11 and on the development of the ANSPs' business plans in Appendix A.

2.27 In May 2014 the draft Plan developed by the NSAs was submitted to UK's Department for Transport (DfT) and Ireland's Department for Transport, Tourism and Sport (DTTAS) for formal adoption at the State level.

2.28 This document forms part of the UK and Irish governments' submission of a final joint UK-Ireland FAB Performance Plan (PP) to the Commission and the PRB.

EU-wide targets

2.29 EU targets for RP2 were adopted by the Single Sky Committee (SSC)[8] on 4 February 2014 and were published in the Official Journal of the European Union[9].

Next steps

2.30 Following UK and Ireland's joint submission, there are a number of steps before the PP comes into force:

- November 2014: The Commission, advised by the PRB, will consider whether the plans meet the requirements of the regulations and reach a provisional decision in November 2014. The Commission will notify Member States on whether plans are consistent with and make adequate contribution to the EU-wide targets for RP2.

---

8 The Single Sky Committee is the comitology body for the purposes of the Single European Sky legislation.

9 COMMISSION IMPLEMENTING REGULATION (EU) of 11 March 2014 setting the Union-wide performance targets for the air traffic management network and alert thresholds for the second reference period 2015-19, Official Journal of the EU L 071 p. 20-23, 12 March 2014, available from: http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2014.071.01.0020.01.ENG

- The CAA will, under UK legislation, need to consult on a licence modification for NERL in late 2014 to implement the new price control arrangements. This will, however, be contingent on the Commission accepting the relevant components of the UK-Ireland FAB Performance Plan.

Overall assumptions for RP2

Economic assumptions

UK

2.31 The UK Gross Domestic Product (GDP) assumptions underpinning STATFOR's February 2014 traffic forecast were based on the recommendation by the CAA, which in turn was based on the average of the HM Treasury comparison of independent forecasts for the UK economy published in November 2013 (for forecast up to 2017). Beyond that, the CAA believed that the long-term historic average of 2.3 percent per annum for 2018-19 would be a more appropriate set of base case assumptions for the UK GDP growth.

2.32 A comparison of these assumptions with the latest available projections by the HM Treasury independent forecasts (February 2014) and the Consensus Forecasts (April 2014) suggests that they are highly compatible with one other and therefore continue to represent an appropriate set of base case assumptions for the UK GDP growth over the RP2 period.

Figure 2.1: GDP growth UK

GDP growth (%)	Actual			Forecast						
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
HM Treasury (Nov 2013)	1.7	1.1	0.3	1.9	2.7	2.4	2.4	2.3	2.3*	2.3*
HM Treasury (Feb 2014)	1.7	1.1	0.3	1.7	2.6	2.5	2.4	2.4	2.4	--
Consensus Forecast (Apr 2014)	1.7	1.1	0.3	1.7	2.8	2.4	2.2	2.3	2.2	2.2

Source: HM Treasury 'Forecasts for the UK economy', Jan 2014 (for 2014) and Nov 2013 (for 2015-17).

* 2018-19 figures are based on long-term historic average annual growth rate.

2.33 The draft PP was based on NATS updated Revised Business Plan (RBP) and financial model. These were based on the assumptions in NATS Revised Business Plan (RBP) which used inflation assumptions consistent with the International Monetary Fund (IMF) in September

2013. As with previous versions of the Business Plan, NERL's Retail Price Index (RPI) assumptions drew on Oxford Economics forecast data for the differential between Consumer Price Index (CPI) (also known for international purposes as the Harmonised Index of Consumer Prices [HICP]),and RPI inflation forecasts.

2.34 This final PP has been revised to take account of the IMF April 2014 forecast. The CAA has derived the RPI by applying the same wedge between RPI and CPI as was applied in the draft plan (see paragraph 6.82)

Figure 2.2: UK inflation assumptions

HICP Inflation 2012=100	2015	2016	2017	2018	2019
Draft PP	107.2	109.2	111.4	113.6	115.9
Final PP	106.5	108.5	110.7	112.9	115.2

Source: IMF April 2014

Ireland

2.35 2013 represented another significant stage on Ireland's road to economic recovery. The Irish economy returned to growth in the second quarter of 2013 and in year-on-year terms, 2013 has seen a modest growth of 0.2%, with growth expected to pick up to 2.0% in 2014. Given the open nature of the Irish economy, its economic performance is heavily reliant on external developments. Despite a fall in private consumption, exports have performed strongly and continue to do so.

Public Finances & Programme Exit

2.36 Ireland exited the EU-IMF programme of financial support on 15th December 2013 and did so without the need for a pre-arranged backstop. The programme met its key objectives of putting the public finances back on a sustainable path, restoring the viability of the financial sector and returning Ireland to financial market funding and to raising its growth potential.

Economic Outlook & Scenarios

2.37 While economic recovery is demonstrably underway, legacy effects – such as high levels of indebtedness (household, corporate and public) and unemployment – will take time to work through and risks to

domestic and international demand make medium-term forecasts subject to a high level of uncertainty.

2.38 There are, nonetheless, good reasons to be confident that the growth potential of the Irish economy remains strong. Ireland continues to be an attractive location for investment. The labour force is relatively young, flexible and well-educated. Ireland has continually restated its commitment to the EU and to membership of the euro area, which presents a potential for much greater growth and stability. The taxation regime is predictable and competitive, and Ireland has a pro-enterprise political and regulatory environment, a growing scientific base and technological infrastructure, all of which encourage investment. A return to growth in 2014 of circa 1% in the euro area and a strengthening of growth in the UK and the US will be beneficial for Ireland given the high share of these three regions in terms of Irish exports.

2.39 The primary national economic goal is now to improve employment levels and household incomes in a manner that is consistent with maintaining competitiveness and the stability of the public finances. Between now and 2020, the economy is expected to grow, leading to more jobs and increases in living standards. It is projected by the Department of Finance that the growth potential of the Irish economy is in the region of 3% per annum over the medium-term, with broadly equal contributions from employment and labour productivity. As a result, unemployment is expected to decline from a peak of 15% to 8.1% in 2020. Returning the public finances to balance in both headline and structural terms is another critical goal once Ireland achieves its budget target in 2015 of a deficit below 3% of GDP, the application of continued budgetary rigour – combined with the positive impact of expected economic growth - will lead to reductions in the Government deficit and the level of public debt. By 2020, the gross debt-to- GDP ratio is expected to fall to just over 90% of GDP, close to the current euro area average.

Figure 2.3: Basic macro-economic and fiscal assumptions

	2013	2014	2015	2016	2017	2018	2019
Real GDP growth	0.2	2.0	2.3	2.8	3.5	3.5	3.5
Nominal GDP (€billion)	166	171	177	185	193	202	211
Unemployment (%)	13.5	12.4	11.8	11.4	10.6	9.6	8.7

Gross government debt (% of GDP)	124	120	118	115	110	104	98
HICP inflation (%)	1.0	1.2	1.4	1.6	1.7	1.7	1.7

Source: Department of Finance, Ireland; except inflation: IMF

Traffic assumptions

UK

2.40 The UK traffic forecasts in the draft PP were those published by STATFOR in September 2013 (base case)[10]. For the final PP these have been updated to reflect traffic forecasts from the February 2014 STATFOR forecasts[11], in accordance with the Performance Regulation. In the final PP, UK continued to apply the base case scenario of the traffic forecast, as oppose to the low case scenario.

Figure 2.4: Traffic forecast UK

	2013	2014	2015	2016	2017	2018	2019
Overall UK flights (000)	2,225	2,242	2,294	2,339	2,377	2,420	2,465
Total service units (000)	9,755	10,025	10,244	10,435	10,583	10,758	10,940

Source: STATFOR

Ireland

2.41 The traffic forecasts for Ireland as used in the PP are based on STATFOR forecasts as published in February 2014. However, two adjustments have been applied to these figures.

2.42 Firstly, rather than use the base case traffic forecast or the low case, the mid-point between these two cases has been used as a first adjustment - whereas the base case appears optimistic, been achieved in recent years, the low case on the other hand seems overly pessimistic.

---

10 Eurocontrol Seven Year Forecasts: September 2013, available from: http://www.eurocontrol.int/sites/default/files/content/documents/official-documents/forecasts/seven-year-flights-service-units-forecast-2013-2019-sep2013.pdf

11 Eurocontrol Seven Year Forecasts: February 2014, available from: https://www.eurocontrol.int/sites/default/files/content/documents/official-documents/forecasts/seven-year-flights-service-units-forecast-2014-2020-feb2014.pdf

2.43 A second adjustment was then made to take account of the specific situation for Irish airspace. En route traffic in Irish airspace is largely driven by factors external to the State. Approximately 75% of the IAA's total revenue comes from aircraft operating through Irish airspace but not taking off from or landing at an Irish airport. The vast majority of aircraft are flying between the US and Europe. As a result of this, the strength of the Irish economy alone is not a good indicator of en route traffic numbers. The health of the US and Eurozone economies are more significant to the air transport market for the North Atlantic routes.

2.44 Inputs into forecasts need to take into account historically discerned precursors for growth:

- The US market – historically, the European market has followed the performance of the US market with a lag of approximately 7 years. The US market has been flat for the last 3 years and assuming historical performance is repeated, this does not bode well for growth within the EU.
- The level of discretionary income available for the travelling public to spend on leisure/Visiting Friends and Relatives travel is not increasing in the EU; in fact it is declining. This has already resulted in significant softening of the summer holiday, peak travel demand and with no signs of recovery visible, growth from this important sector cannot be relied upon.
- The air freight market is a leading indicator of economic activity and the lack of significant growth in freight traffic between the EU and the Far Eastern economic power house economies does not bode well for this very important aviation sector. Without a significant increase in traffic in this area, the likelihood of reaching STATFOR forecasted targets is low.
- STATFOR cannot take the impact of industry consolidation, especially in the US, into account as it is an unknown quantity. When 2 carriers with scheduled operations to Europe merge, it is likely that there will be some resultant reduction on the number of flights on those routes.

2.45 The following table presents traffic forecasts for RP2, based on STATFOR data adjusted for local conditions for the purposes of this

plan.

Figure 2.5: Traffic forecast Ireland

	2015	2016	2017	2018	2019
Total service units (000)	3,983	4,050	4,113	4,185	4,262

Source: STATFOR, IAA SRD adjustments

Status of Aviation Safety

UK

2.46 The UK approach to aviation safety is described in the UK State Safety Programme which is developed by the CAA in conjunction with the DfT, the Air Accidents Investigation Branch, Ministry of Defence (MoD) and Air Safety Support International[12]. In addition, the actions being taken to achieve the Acceptable Level of Safety Performance and improve safety are described in the CAA Safety Plan 2011 to 2013[13].

2.47 The CAA continuously monitors aviation safety performance through a suite of Safety Performance Indicators (SPI) including activity (or leading indicator) and outcome (or lagging indicator) based measures. The outcome based SPIs cover a range of event scenarios, each linked to a potentially lethal accident outcome, and event severities. For example, for the outcome of a mid-air collision, the SPIs monitored include loss of separation, Traffic alert and Collision Avoidance System (TCAS), Resolution Advisory (RA), level busts and airspace infringements. SPIs relate to UK operated aircraft anywhere in the world or UK airspace, and cover the full spectrum of operations from commercial air transport to general aviation. The means of how and what information to publish is under review.

Ireland

2.48 Ireland has also developed a State Safety Programme (SSP) as an integrated set of regulations and activities aimed at improving safety in

---

12 New State Safety Programme shall be published in March 2014. State Safety Programme from February 2009 is available from: http://www.caa.co.uk/docs/33/CAP784.pdf

13 CAA Safety Plan for years 2014 to 2016 shall be published in April/May 2014. CAA Safety Plan for years 2011 to 2013 is available from: http://www.caa.co.uk/docs/978/CAA_Safety_Plan_2011.pdf

accordance with its obligations under ICAO. Under the SSP the IAA has developed two key publicly available documents, a State Safety Plan and an Annual Safety Performance Review.

2.49 The State Safety Plan[14] is a rolling 3 year plan that was first produced in 2010 and is reviewed annually. The latest update covering the period 2013-2016 is available on the IAA website.

2.50 The Annual Safety Performance Review[15] describes the performance of the aviation system in Ireland, including ANS.

2.51 A set of safety indicators have been established in Ireland to monitor safety performance within the Irish air navigation services domain. A number of these indicators are tracked with specific targets at both national and Unit level. Unit level targets are identified for the three IAA air traffic services unit locations; Dublin, Cork and Shannon. These safety indicators and targets do not fall within the scope of the Performance Regulation.

Institutional Context for ANS Provision

2.52 The UK NSA is the CAA, which is a public corporation independent of government and ANSPs. These regulatory arrangements are not expected to change during the course of RP2.

2.53 En route services in the UK are provided by NATS En Route plc (NERL) under licence, subject to economic regulation. In the UK, the provision of en route ANS has been subject to economic regulation and fixed control period price controls since the privatisation of NATS in 2001. This has been given effect through a Licence under the Transport Act 2000, with the CAA acting as the economic regulator. There are many parallels between the UK economic regime and the Performance Scheme targets fulfilling the requirements for the NATS Licence.

2.54 A separate NATS subsidiary, NATS Services Ltd (NSL), currently provides terminal ANS at 15[16] UK airports under contract to the

---

[14] IAA State Safety Plan, available from: https://www.iaa.ie/media/StateSafetyPlan2013-20161.pdf

[15] IAA Annual Safety Performance Review, available from: https://www.iaa.ie/safety-performance

[16] ANS at Birmingham will be provided by NSL until the end of March 2015; from 1.04.2015 for

owner/operator. However, the terminal approach component of the London Approach Services is provided by NERL under licence.

2.55 NATS Holdings Ltd ultimately owns both NERL and NSL. The current ownership of NATS is a public private partnership (PPP) in which the government and a group of airlines have large minority shareholdings with employees and Heathrow Airport also holding small shareholdings. Some of the airline shares have been purchased by Universities Superannuation Scheme Limited (USS), a pension fund unrelated to the players in the aviation industry (subject to approval by the European Commission). It is possible that the pattern of shareholding will evolve further during the course of RP2.

2.56 The UK applies a Joint & Integrated (J&I) Concept. This is the collaborative approach by the CAA, NERL and the MoD to the separate functions of airspace policy and planning and air traffic service provision. The underpinning agreements are sustained through formal agreements approved by the CAA. Oversight is exercised through the Joint Air Navigation Services Council to ensure that services are delivered on a joint and integrated basis.

2.57 MET services in the UK are provided by the Met Office, which is designated and regulated by the CAA under the SES Service Provision Regulation to provide forecast and warning MET to meet the UK's obligations under ICAO Annex III. The designation describes the services and products required, as well as the annual cost uplift arrangements.

2.58 The institutional context for the provision of ANS in Ireland, as covered by this plan, is as follows:

- The Department of Transport, Tourism and Sport (DTTAS) is responsible for ensuring that aviation practices and procedures in Ireland comply with best international standards; promoting the development of a vibrant, competitive and progressively regulated aviation sector and the provision of adequate airport infrastructure and competitive airport services. Implementation of some aspects of these policies has been entrusted to a range of State-sponsored bodies and Agencies for which the Department retains overall responsibility.

the remainder of RP2 it will be provided by Birmingham Air Traffic Limited.

- The Irish Aviation Authority is one of the mentioned State-Sponsored Bodies. The IAA is a 100% State-owned commercial company, which carries out operational and regulatory functions and services relating to the safety and technical aspects of civil aviation. The Authority ensures that Irish civil aviation operates to international and European safety standards and systems in accordance with international agreements.
- The regulatory and service provision roles of the IAA are separated at a functional level:
  - The IAA Safety Regulation Division is the NSA for Ireland. Through its Aeronautical Services Department, it certifies and regulates the provision of ANS within the Shannon FIR/UIR and other areas through delegated arrangements. It also regulates the competence of personnel involved in the provision of ANS. In addition the Aeronautical Services Department is tasked with the licensing of aerodromes in Ireland including the three State airports of Dublin, Shannon and Cork.
  - The IAA Operations and Technology & Training Divisions form the air navigation service provision (IAA ANSP) element of the IAA. The Operations Division provides air traffic management services in en route airspace controlled by Ireland, as well as Dublin, Cork and Shannon airports. Air traffic management services include air traffic control, flight information, alerting and the aviation rescue and coordination function of search & rescue services. The Operations Division also provides aeronautical information services and performs the airspace management and air traffic flow management functions. The Technology & Training Division is responsible for the day-to-day acquisition, putting into service and maintenance to certification standards of the IAA's complex network of systems.
  - Met Éireann provides meteorological facilities to civil, military and general aviation. The Aviation Services Division comprises the Central Aviation Office at Shannon Airport, together with the meteorological offices at Dublin, Cork and Casement airports. It issues forecasts (Terminal Aerodrome Forecasts and Local Area Forecasts) for the various airports and smaller airfields in the country as well as local warnings, warnings (Sigmets) for the Shannon FIR, en route documentation and briefings.

CHAPTER 3

Safety

SES Requirements

3.1 The Performance Regulations require targets to be set at FAB level against the following KPIs:

- The minimum level of the effectiveness of safety management (EoSM): this KPI shall be measured by the maturity level of implementation of the following management objectives - safety policy and objectives, risk management, assurance, promotion and culture.
- The percentage of application of the severity classification using the Risk Analysis Tool (RAT) methodology to the reporting of, as a minimum, three categories of occurrences: separation minima infringements, runway incursions and ATM-specific occurrences at all air traffic services units. When reporting the above occurrences the following severity classes shall be used - serious incident, major incident, significant incident, no safety effect and not determined.
- Just Culture (JC).

3.2 The plan does not include safety incentives.

KPI #1: Level of EoSM

3.3 The PP sets out the following FAB targets:

- by 31 December 2019 at the latest, NSAs shall achieve at least Level C[17] "Implementing" for all management objectives ('safety policy and objectives', 'safety risk management', 'safety assurance', 'safety promotion' and 'safety culture');

[17] Level C and D are defined in the acceptable means of compliance and guidance material from EASA for the implementation and measurements of safety KPIs as referred to in Article 7 of the Performance Regulation.

These maturity levels are as follows:

Level A - "Initiating" - processes are usually ad hoc and chaotic;

- by 31 December 2019 at the latest, ANSPs shall achieve at least Level D "Managing and Measuring" for the management objectives 'safety policy and objectives', 'safety risk management', 'safety assurance', and 'safety promotion' and at least Level C for the management objective 'safety culture'.

3.4 In response to the stakeholder consultation, the Airline Community stated that the Level C/D descriptors for the ANSP targets are already reflective of what the community observes to be in place and therefore it should be reconsidered whether D/E level targets were not more appropriate by close of RP2.

3.5 The safety targets were challenged and discussed at great length at the EU level. Furthermore, the NSAs consider the target level for ANSPs to be appropriate. Higher targets would drive resources towards activity specifically to support a higher score and the NSAs are not convinced that this would be the best use of resources that best drive safety improvements. The final PP therefore maintains the targets as set at the EU level.

KPI #2: Application of the severity classification based on the RAT methodology

3.6 The PP sets out the following FAB targets:

- by 31 December 2017 and every year thereafter until the end of RP2, Member States, through their NSAs, shall ensure the collection and reporting to European Aviation Safety Agency (EASA) of the 'ATM Overall' severity determined by the Risk Analysis Tool methodology for the classification of at least 80% of the annually reported separation minima infringements and runway incursions with categories A (serious incidents), B (major incidents) and C (significant incidents)[18];

Level B - "Planning/Initial Implementation" - activities, processes and services are managed;

Level C - "Implementing" - defined and standard processes are used for managing;

Level D - "Managing & Measuring" - objectives are used to manage processes and performance is measured;

Level E - "Continuous Improvement" - continuous improvement of processes and process performance.

[18] The categories AA, A, B, C, D and E are defined as acceptable means of compliance and

- by 31 December 2017 and 2019 at the latest, Member States, through their NSAs, shall ensure the collection and reporting to EASA of the 'ATM Overall' severity determined by the Risk Analysis Tool methodology for the classification of at least 80% and 100% respectively of the annually reported ATM-specific occurrences with the categories AA (total inability to provide safe ATM services), A (serious inability to provide safe ATM services), B (partial inability to provide safe ATM services) and C (ability to provide safe but degraded ATM services);
- by 31 December 2017 and 2019 at the latest, ANSPs shall report to NSAs the 'ATM Ground' severity using the Risk Analysis Tool methodology for the classification of at minimum 80% and 100% respectively of the annually reported separation minima infringements and runway incursions with categories A, B and C; and
- by 31 December 2017 and 2019 at the latest, ANSPs shall report to NSAs the 'ATM Ground' severity using the RAT methodology for the classification of at least 80% and 100% respectively of the annually reported ATM-specific occurrences with the categories AA, A, B and C.

3.7 The target levels adopted in the PP are consistent with EU-set targets and have not been amended since the draft PP given the general acceptance of targets set.

KPI #3: Just Culture

3.8 Commission Implementing Regulation (EU) 390/2013 (the Performance Regulation) promulgates in Article 2 the following definition of Just Culture:

3.9 *'just culture' means a culture in which front line operators or others are not punished for actions, omissions or decisions taken by them that are commensurate with their experience and training, but where gross negligence, wilful violations and destructive acts are not tolerated*;

3.10 The CAA and IAA SRD jointly promote this JC definition as a guiding principle in relation to both operational and supervisory activities in the

guidance material from EASA for the implementation and measurement of safety KPIs as referred to in Article 7 of the Performance Regulation.

FAB. Both States recognise and espouse the value of JC in providing a safe operating environment, and in helping to underpin the goal of continuous improvement in flight safety. The Policy Statement on Just Culture is available in Appendix B.

3.11 The FAB ANSPs are exhorted to take note of this Just Culture Policy Approach and to incorporate equivalent principles within their respective ANSP documentation, activities and processes.

3.12 The FAB ANSPs, recognising the integral architecture of Safety Management Systems (SMS) and JC, are encouraged to ensure that their organisation is structured in such a way as to provide assurance on the implementation of Just Culture principles.

3.13 The targets for JC have been slightly revised and a monitoring regime has been introduced following the stakeholder consultation on the draft PP. Details of the individual representations received and NSAs response to them are discussed in Chapter 11.

Targets

3.14 In a continuing effort to promote and operate within JC principles and processes, the UK and Ireland NSAs have agreed to set the following Just Culture FAB targets for both NSAs and participating ANSPs for Reference Period 2.

3.15 NSA - Target:

- The UK and Irish NSAs will ensure that formal just culture training is provided to all NSA personnel. At a minimum, 60% of staff will have completed the training by end of 2017 and all staff by 2019. The NSAs will ensure that a Just Culture training requirement (to include continuation training) is documented in staff training and induction programmes.

3.16 ANSP - Target:

- The FAB ANSPs will ensure that formal Just Culture training is provided to staff at all levels of accountability in the organisation from the highest management level to front line operators. At a minimum 60% of staff will have completed the training by end of 2017 and all by 2019. The ANSPs will ensure that a Just Culture training requirement (to include continuation training) is documented in staff training and induction programmes.

Guidance:

3.17 NSA - Target:

- The UK and Irish National Supervisory Authorities will ensure that just culture training is cascaded from the highest leadership level throughout the organisations. Training will be focused on appropriate senior management and staff responsible for ATM/ANS, with a particular focus on consistent application of JC principles in safety occurrence oversight or regulatory investigations.
- The training will incorporate appropriate personnel from the top level to the newest recruit and will be tailored accordingly, whilst simultaneously recognising that the training objective will be achieved by open engagement across a mix of seniority, specialism and nationality.

3.18 ANSP - Target:

- The FAB ANSPs will ensure that just culture training is cascaded from the highest leadership level throughout the ANSP organisation. Particular focus will be placed on the consistent application of Just Culture principles in safety occurrence reporting and investigation. The training will incorporate appropriate personnel from the top level to the newest recruit and will be tailored accordingly, whilst simultaneously recognising that the JC training objective will be achieved through open engagement across a mix of seniority, specialism and nationality.
- The training will be delivered either through a standalone module or incorporated into standing induction training or recurrent training programmes. 100% of identified staff shall complete the training by 2019.

3.19 NSAs and ANSPs will create a Just Culture syllabus of training in advance of RP2 commencement and will also identify those members of their respective organisations from top level down to undergo the training.

3.20 NSAs and ANSPs will review the annual EASA Just Culture questionnaires with a view to identifying areas for improvement at FAB and/or national level.

NSA Monitoring

3.21 NSAs will identify common measures to analyse the quality of and the outputs from Just Culture training and the achievement of the targets.

3.22 These measures will include:

- Establishing in each year of RP2 the percentage of staff completing the training
- Adoption of a formal tool for the analysis of the effectiveness of the training
- Monitoring the level and quality of incident reporting and investigation
- Monitoring the level of Just Culture as validated annually and reported in the EASA questionnaire.

CHAPTER 4

En Route Capacity

SES Requirements

4.1 The Performance Regulation requires the capacity target to be set at FAB level with a breakdown for monitoring, for reasons of transparency, at the most appropriate level. The capacity KPI is the average minutes of en route air traffic flow management (ATFM) delay per flight (the target is further referred to as C1) defined as:

- the en route ATFM delay is the delay calculated by the Central Unit of ATFM, expressed as the difference between the estimated take-off time requested by the aircraft operator in the last submitted flight plan and the calculated take-off time allocated by the Central Unit of ATFM;
- the indicator covers all IFR flights traversing the local airspace and all ATFM delay causes[19], excluding exceptional events[20]; and
- the indicator is calculated for the whole calendar year and for each year of the reference period.

4.2 Member States are also required to adopt financial incentives for their ANSPs for the key performance area of capacity. These incentives shall consist of bonuses for exceeding and penalties for under-achieving target levels of performance and are to be added to or deducted from the adopted determined costs (DC) according to the level of performance achieved. The maximum amount of aggregate bonuses and the maximum amount of aggregate penalties shall not

---

19 Air Traffic Flow Management delay relates to delay arising from restrictions on flow rates through particular airspace to protect safety based on flight plans. It does include in-flight stacking or any other causes.

20 Exceptional events are defined in the Performance Regulations as "*circumstances under which ATM capacity is abnormally reduced so that the level of ATFM delays is abnormally high as a result of: a planned limitation induced through operational or technical change, major adverse weather circumstances, the unavailability of large airspace parts either through natural or political reasons, or industrial action and the activation of the EACCC by the Network Manager as a result of one or more of these causes".*

exceed 1% of the revenue from air navigation in that year. The Regulations allow the target levels of performance to be adjusted to cover only delay causes related to air traffic control (ATC) capacity, ATC routing, ATC staffing, ATC equipment, airspace management and special events.

4.3 The regulations do not preclude additional incentives as long as these encourage ANSPs to achieve a high level of performance, meet the associated targets, and when aggregated with the incentive on average delay have a maximum bonus or penalty of 1% of revenue.

4.4 The Commission has stated[21] that the 1% maximum amount of aggregate bonuses/penalties applies individually to each of the capacity and the environment KPAs.

4.5 In its response, NATS has questioned whether this interpretation that 1% can be applied to incentive mechanisms for capacity and the environment individually or in aggregate is consistent with the wording of the Performance Regulation and has requested legal opinion on this point.

4.6 The CAA observes that the view of the Commission was made in open forum by the Head of the Single European Sky Unit and was subsequently confirmed in correspondence with the relevant desk officer. The CAA therefore believes that this opinion carries the appropriate weight. In addition, Performance Plans will have to be formally adopted by the Commission before the scheme comes into force so there are likely to be further checks on legality before it comes into force.

FAB Target

4.7 The draft PP as used in the formal consultation process proposed a FAB-level en route capacity target as set out in Figure 4.1 below[22].

---

[21] Commission/PRB workshop on incentives - 12 November 2013, confirmed in a note from the workshop available from: http://www.eusinglesky.eu/_literature_128248/Summary_Outcome_PRB_Stakeholder_Workshop_on_Incentive_Mechanisms

Further confirmed during NSA Coordination Platform (NCP) performance working group - 8 May 2014.

[22] The FAB target is subject to change until final decision on EU wide targets and FAB reference values is made at EU level.

This was based on the EU wide target and the reference values prepared by the EUROCONTROL as a breakdown of the EU-wide target by FAB, extant at the time. While the overall EU-wide target has remained the same, the EUROCONTROL Network Manager has since made minor revisions to the reference values for each FAB[23].

Figure 4.1: UK and Irish Aggregated Capacity Target: C1

(Minutes delay per flight)	2015	2016	2017	2018	2019
EU-wide Target	0.5	0.5	0.5	0.5	0.5
FAB Reference Value (Draft Proposal)	0.28	0.29	0.29	0.29	0.28
FAB Target (Draft Proposal)	0.28	0.28	0.28	0.28	0.28
FAB Reference Value (revised)	0.25	0.26	0.26	0.26	0.26
FAB Target (Final Plan)	0.26	0.26	0.26	0.26	0.26

Source: CAA, IAA SRD

4.8 The UK and Ireland have set a FAB target which is constant at 0.26 minutes/flight through the period rather than fluctuating between 0.25 and 0.26.

Allocation to ANSPs

4.9 The UK and Ireland propose to allocate the FAB target to NERL and IAA ANSP respectively, as follows.

Figure 4.2: Allocation of FAB target

(minutes delay per flight)	2015 - 2016	2017-2019
UK	0.23	0.23
Ireland	0.13	0.14

Source: CAA, IAA SRD

UK

4.10 The CAA set the UK allocation of the FAB capacity target in RP2 to be consistent with the revised FAB reference value.

[23] European Network Operations Plan 2014-2018/19, March 2014 edition, available from: http://www.eurocontrol.int/publications/european-network-operations-plan-2014-2018-19.

4.11 The CAA notes, however, that in its RBP, NERL set itself more testing targets based on:

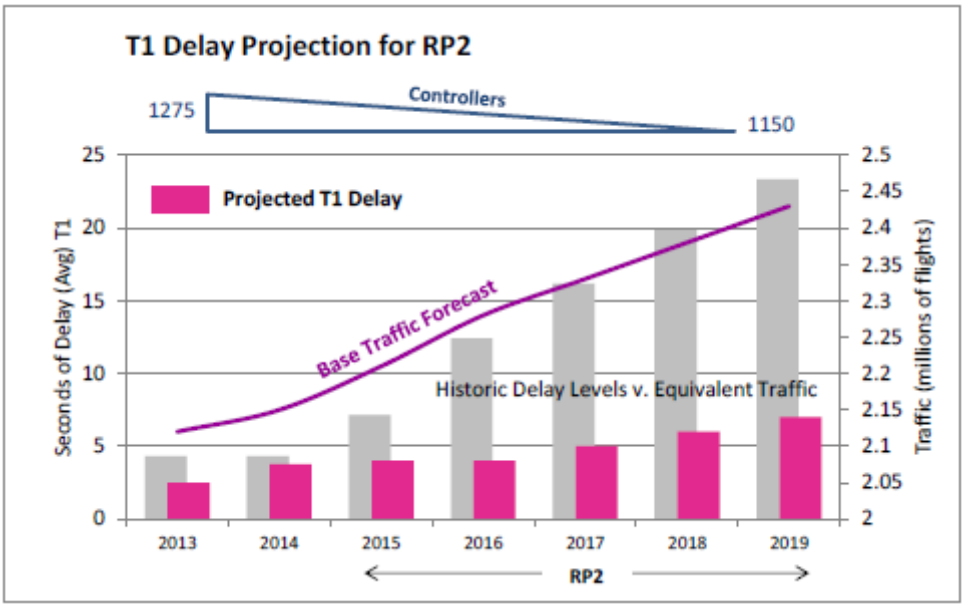
- forecast traffic volumes not reaching previous (2007) peak levels until beyond 2019, so that the ATC system has sufficient structural capacity for RP2 in terms of airspace sectors (based on current traffic patterns);
- a strategy to ensure that this capacity is used efficiently;
- optimised airspace throughput – airspace and procedures using performance based navigation; and
- effective network management – continuing to develop network management techniques based on real-time information to balance network demand / capacity.

4.12 The NERL RBP also recognised challenges including the need to:

- optimise the capacity of the London TMA airspace through the London Airspace Management Programme (LAMP);
- deal with a number of transitions within the control period; and
- balance cost savings targets against service delivery.

4.13 NERL published the following expectations to users as part of its RBP.

Figure 4.3: NERL Expectations of en route delay in RBP[24]



Source: NERL

4.14 The CAA notes that the increase in traffic projections between the RBP and STATFOR February 2014 means that achieving these levels of delay will be more testing than assumed. In any event, the CAA has decided not to take account of these more testing projections in the UK contribution to the KPI target but will apply them (adjusted to take account of differences in measurement where appropriate) in determining the thresholds for the payment of bonuses in the additional UK incentives below.

IRELAND

4.15 The IAA SRD has deemed it appropriate to keep the Irish allocation of the FAB capacity target in RP2 consistent with the FAB reference value. Within the area of responsibility of the IAA ANSP, the approach that was applied in RP1 for setting the en route capacity target will be continued into RP2.

4.16 Delay has not historically been a significant problem in Irish airspace, and the starting point for RP1 was an operation with virtually no delay. However, there is a cost associated with providing a service without

[24] Refers to NERL attributable delays per the RP1 definition and using NERL adjusted data rather than CFMU data.

delay, and for RP1 an approach was chosen in which cost savings were prioritised over delay. As a result only very limited investment was planned in capacity enhancing measures. This same approach will be applied to RP2.

4.17 Figure 4.4 shows the measures planned in Irish airspace in response to the Network Strategy Plan (see also Annex B to final PP in EU template). The measures can be split into two parts: specific measures and ongoing initiatives. Some of the specific measures are expected to have a positive impact on en route capacity, but none of them are introduced with the sole objective of increasing capacity – in all cases the main driver will be e.g. safety, harmonisation, regulatory compliance, etc. The ongoing initiatives are linked to more general, strategic issues such as recruitment and continuous improvement of processes such as sectorisation and ATFCM. Again, the sole objective is not simply additional capacity, although this can be one of the effects.

4.18 The combination of limited traffic growth and low delays in recent years shows that there is still spare capacity in the Irish ATM system - this makes the planned low level of capacity increase an appropriate way forward.

Figure 4.4: Measures planned in Irish airspace

2014	2015	2016	2017	2018	2019
Common					
			Training for transition altitude	Common transition altitude for the FAB	
UK/Ireland FAB initiatives					
On-going recruitment to maintain staff levels					
Improved ATFCM, including STAM					
Dublin					
	Point merge RWY 10	Tower electronic strips			
		Sector capacity re-evaluation (CAPAN)			
		Training for ATM system upgrade			
		Upgrade of the ATM system	Upgrade of the ATM system		
	A-CDM at Dublin airport				
Cross rating training					
Shannon					
FAB dynamic sectorisation trials		Sector capacity re-evaluation (CAPAN)			
Training for CPDLC upgrade	Training for ATM system upgrade		Training for ATM system upgrade		
		ATM system upgrade		ATM system upgrade	
CPDLC					
Extra sectors as required – dynamic sectorisation available					
Developing Queue Management programme					

Source: IAA SRD

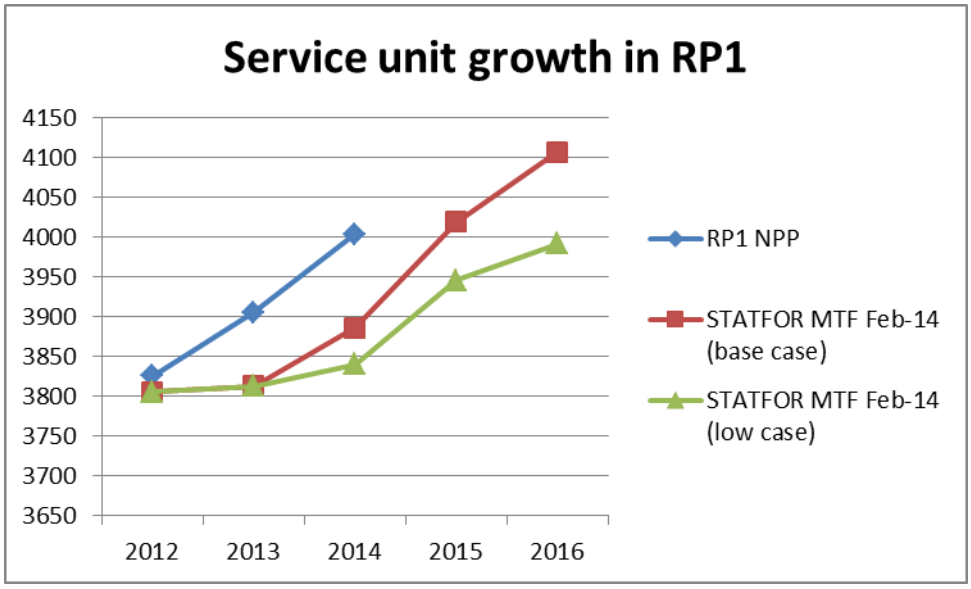
4.19 Given forecast traffic growth over RP1, a small increase in delays had been foreseen for the first reference period as a result of the chosen approach. The cost of any increase in delay would have been outweighed by the cost of further investment to maintain zero delay. Since the forecast traffic growth for RP1 did only partially materialize, Ireland is successfully maintaining provision of service at zero delays in the first part of RP1.

4.20 Applying the approach of limited investment in capacity, relevant targets for RP2 will be set at similar levels to those that were agreed for RP1. Because traffic levels are still lagging behind RP1 forecasts,

the Irish contribution to the FAB targets for RP2 could reasonably be below 0.15. The target for the first two years of the period will be set at 0.13 - just below the previous RP1 target for 2014. Since traffic is expected to increase during RP2, a small increase in the capacity target over RP1 values will be applied for the second reference period, to allow for traffic growing faster than capacity. The target for the final three years of RP2 will therefore be set at 0.14.

4.21 Figure 4.5 supports a level of target setting that is consistent with RP1. The graph shows the traffic forecast used for the Irish RP1 NPP, as well as STATFOR data from February 2014 (which means that 2012 and 2013 data is actual information). Traffic levels are below the expectations of 2011, and the 2014 forecast from the RP1 planning stage will not be achieved until 2015 at the earliest. In fact, the traffic level will only be achieved in 2015 if traffic grows in 2014 and 2015 at a rate that has not been achieved for several years.

Figure 4.5: Service unit ('000s) growth in RP1



Source: IAA SRD

Incentive Mechanisms

4.22 The UK and Ireland have adopted a common incentive mechanism to apply to ATFM delay per flight.

4.23 The UK has also adopted additional incentive mechanisms in the UK alone to two additional aspects of delay which were incentivised in RP1 and which have the support of users, see "Additional UK

Incentives" section below (paragraphs 4.32 - 4.45).

4.24 Ireland has decided that the maximum penalty or bonus under this incentive mechanism for IAA would be no greater than 1% of ANSP en route revenue. The UK has decided that the maximum penalty or bonus should not be more than 0.25% of ANSP en route revenue (with a further 0.75% being applied to the additional UK capacity incentive measures).

UK and Ireland: Structure

4.25 No comments were received in the consultation on the common structure of the UK Ireland scheme (although airlines did comment on the extent to which the specific provisions of the UK and Ireland elements of the scheme differ). The structure has therefore been confirmed as described in the remainder of this section.

4.26 The common incentive on each ANSP (further referred to as C2) will have the following characteristics:

- incentives will be calculated on a calendar year basis and be paid in year n+2;
- no bonus will be payable to either NERL or the IAA for a relevant year unless the FAB target for that year has been met and similarly no penalty will be payable unless the FAB target for that year has been missed;
- the calculation of performance will be as for the KPI target for capacity except that it will only be for those causes listed in article 15(g) of the Charging Regulation (ATC capacity, ATC routing, ATC staffing, ATC equipment airspace management and special event). For avoidance of doubt, ATC attributable refers to:

Figure 4.6: Delay causes subject to the incentive scheme

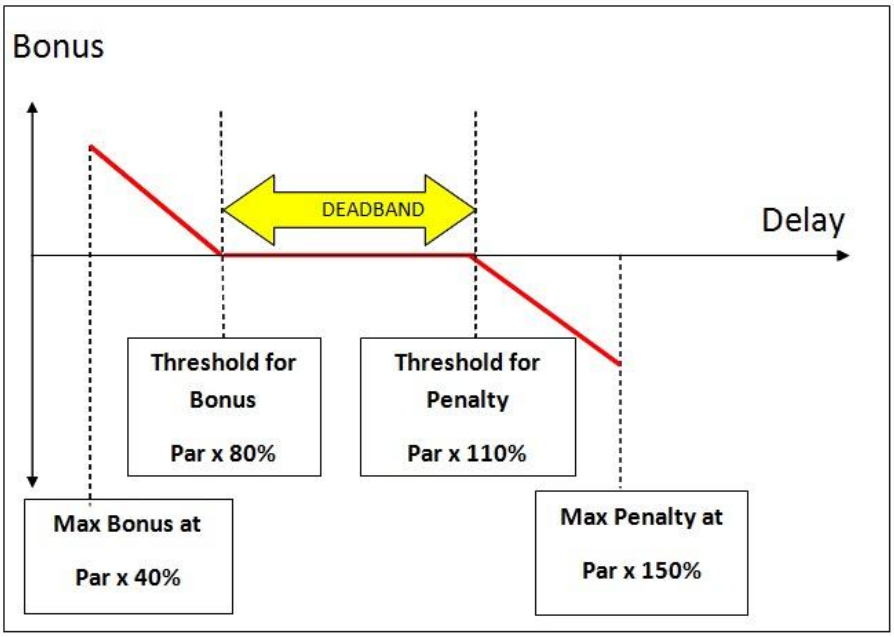
Regulation Cause	NM Code	Regulation Location	Examples	IATA Code	IATA Delay Cause
ATC Capacity	C	En route	Demand exceeds capacity; Planned staff shortage	81	ATFM due ATC En route Demand/Capacity
ATC Routings	R	En route	Phasing in of new procedures; ATFCM scenarios, Network Solutions	81	ATFM due ATC En route Demand/Capacity
ATC Staffing	S	En route	Unplanned staff shortage	82	ATFM due Staff/Equipment En route
ATC Equipment	T	En route	Radar failure; RTF failure	82	ATFM due Staff/Equipment En route
Military	M	En route	Airspace availability; Military exercise	82	ATFM due Staff/Equipment En route
Special Event	P	En route	European football cup; Heads of Government meetings; Upgrade of ATM systems	82	ATFM due Staff/Equipment En route

Source: CAA, IAA SRD

- subject to the FAB performance being above or below target, any bonus or penalty will be then applied to each of the en route ANSPs based on their performance. If the total FAB performance score has exceeded the “dead band” in either direction, but only one of the ANSPs has exceeded their local target “dead band”, then only that ANSP will have bonuses or penalties applied at the rates below. If the total FAB score has exceeded the “dead band” in either direction, and both of the ANSPs have exceeded their local target “dead band”, then each ANSP will have bonuses or penalties applied at the rates above.
- there will be a par value for this measure for each ANSP consistent with the annual KPI values in Figure 4.2 above but adjusted to take account of the fact that it is limited to the causes listed above;

- there will be a dead-band of -20% to +10% around the par value (so bonuses would only start to be paid when the delay was less than 80% of the par values and penalties when the delay was more than 110% of the par value);
- there will be a smooth sliding scale with the maximum penalty to be paid where delay is at 150% and a maximum bonus at 40% of the par value.

Figure 4.7: Structure of joint UK Ireland incentive: C2



Source: CAA & IAA SRD

UK and Ireland: Calculation of bonus and penalty thresholds

4.27 The target values for the capacity KPI may be modified to generate a par value for the incentive with an equivalent level of performance. This is because the incentive scheme covers only those causes attributable to each ANSP consistent with the list of causes listed in Figure 4.6 above. The plan is based on the following estimates and indicative values:

Figure 4.8: Calculation of bonus and penalty thresholds C2

Minutes/Flight	KPI target (C1)	Margin non-ANSP attributable (estimate)	Incentive par value (C2)*	Bonus threshold (C2)*	Penalty threshold (C2)*
NERL	0.23	0.05	0.18	0.14	0.20
IAA	0.14	0.00	0.14	0.11	0.15

* based on ANSP attributable delays only as listed in table 4.6 above.

(Rounded to 2 significant decimal places)

Source: CAA & IAA SRD

4.28 NERL has argued that the C2 metrics for the UK should:

- include an allowance for transition days (when new systems or processes are being introduced); and
- increase the UK par value by 20% to reflect the fact that it is based on raw EUROCONTROL data which NATS estimates to overstate delay by some 20%.

4.29 The CAA has decided not to make a further allowance for transition days in the C2 measure. The metric has been calibrated based on the FAB reference value which does not have any allowance for transitional days. To make such an allowance for the UK would further differentiate the approach taken between the UK and Ireland. The Performance Regulation does, however, exclude exceptional events which include circumstances where ATM capacity is abnormally reduced because of an operational change.

4.30 For the UK-only incentives C3 and C4 (see section below), it is appropriate to make some adjustments for differences in measurement because the relevant yardsticks and measures in RP1 were based on NERL's basis of measurement and the measurements in RP2 will be based on the EUROCONTROL basis of measurement. However, the UK-Ireland incentive for C2 is being specified from scratch and calibrated from the FAB reference values. This will already be fully aligned with the EUROCONTROL basis of measurement. The CAA has therefore decided that it is not necessary or appropriate to make any adjustment to allow between the NERL and EUROCONTROL basis of measurement.

4.31 Ireland will not adopt the additional incentive mechanisms proposed by the UK. Since, historically, delays have been very low in Irish airspace, the specific issues that the UK's proposed incentives aim to address (long delays, delays at specific times of the day, and individual days of excessive delay) have not been major problems in Ireland. Adopting the relevant incentive mechanisms would not materially change the behaviour of the Irish ANSP. For Ireland, relevant actions of the ANSP will be focussed on maintaining the general current low levels of delay, which implies minimising long delays, delays at specific times of the day, and individual days of excessive delay.

Additional UK Incentives

4.32 In RP1, the CAA applied three capacity incentives mechanisms following extensive consultation. The first of these, based on average delay per flight attributable to NERL, was similar to the proposed incentive mechanism applied to average delay in a shared mechanism between the UK and Ireland so the CAA considers this to be addressed by the joint incentive mechanism for the UK and Ireland set out above (C2). The CAA sees considerable merit in retaining the other two incentive mechanisms, the main features of which are set out in Figure 4.9 below.

Figure 4.9: Summary of Performance Incentives for Capacity Target

Additional Capacity KPIs	C3*	Impact Score (placing greater weight on long delays and departures in the morning and the evening peaks)
	C4*	Daily Excess Delay Score based on weighted delays exceeding pre-determined thresholds on a daily basis
Financial Incentive		NERL is solely accountable for the achievement of the capacity targets C3 and C4

Source: CAA

* The C3 and C4 delay causes subject to the incentive scheme are the same as those for C2, listed in Figure 4.6

4.33 C3 enjoys considerable support from users as it reflects the relatively high impact of long delays and delays early in the day that have a disproportionate knock-on effect on the punctuality of subsequent flights. The CAA therefore proposes to retain this incentive with a large proportion of the maximum 1% pot of bonus or penalty for C3 (50% of the total capacity penalty and 75% of the bonus). This will be

subject to the constraint that bonuses will only be paid if the FAB as a whole is also meeting the FAB-wide target for C1 and penalties will only be paid if the FAB as a whole is achieving a C1 delay worse than the FAB-wide target.

4.34 C4 provides an incentive on NERL to avoid individual days of particularly severe disruption which have a disproportionate impact on airline service. Unlike C1, C2 and C3, such poor performance on an individual day is generally due to some form of system failure rather than any underlying shortfall in ongoing capacity. There were hardly any such incidents in 2011 or 2012 so C4 generated maximum bonuses. The metric in 2013 was completely dominated by major ATFM delays on 7 December which implied a significant penalty.

4.35 The CAA considers that there is merit in continuing to have an incentive to avoid such occurrences. The CAA, however, proposes the following modifications to C4 for RP2:

- No bonuses would be applicable for C4 (the maximum bonus for C2 and C3 would however still sum to 1%). This recognises that failure against this measure relates to exceptional events and a reasonable user expectation of such events is likely to be zero.

4.36 The CAA considered linking the incentive for C4 to the performance of C1 at FAB level so that no penalties would be paid unless the FAB as a whole was failing to meet its C1 target. The CAA decided not to do so because:

- this would seem to frustrate the purpose of this metric, from a user perspective, which is to capture particularly bad days even where the ANSP is performing relatively well for the year as a whole;
- the causes of C4 delay, e.g. system failures, tend to be different to the causes of persistent poor performance, e.g. a capacity shortfall. (Although in some circumstances a number of significant outages could be sufficient to affect the overall C1 target.)

4.37 The C3 and C4 incentives will continue to be subject to the provisos in RP1 that:

- on days when C4 applies, the implied penalty applied for that day for C3 and C4 in aggregate should be the higher of the C3 or C4 penalties for the day;

- an exemption to the C3 and C4 measure when major new systems or airspace changes are being implemented. NERL is required to consult on the exemptions in advance and a limit will apply of 75 days for the period of RP2 taken as a whole.

4.38 The CAA considered an argument made by NERL before the publication of the draft Performance Plan that the delays on days which trigger the C4 measure should not count towards the (joint) C2 measure as this would also be double counting. The CAA does not consider counting delay against more than one measure as being unreasonable or inconsistent so long as the rates of penalty are set in the knowledge that this will apply. The CAA has decided to continue to count delay on days that trigger a C4 penalty as also counting towards the C2 measure and has had this in mind when developing rates of penalty.

4.39 The CAA also considered an argument that there might be perverse incentives if there were circumstances on particularly bad days when NERL would suffer less financial loss from not serving flights rather than suffering the penalties from delay under C4. The CAA considers that NERL is obliged to provide a continuous supply under Condition 2 of its licence and the potential consequences of a licence breach should be sufficient to stop NERL from pursuing such a course.

4.40 A significant change for RP2 will be that both the C3 and C4 incentive metrics will use the data provided by EUROCONTROL's Network Management Directorate (NMD)[25] rather than data which NERL has adjusted itself. In making this change the CAA has recognised that the NMD data will now be used for financial incentives for all the States subject to SES and should therefore reflect the level of assurance that will be required for this function. On the basis of past performance there is an apparent difference of about 20% in these data sources. The CAA has made full allowance for this implied difference in assessing reasonable thresholds for the payments of bonuses and penalties.

4.41 In making proposals for the draft Performance Plan the CAA was mindful that the existing rates of bonuses and penalties are low and may not be sufficient to outweigh the costs of increasing capacity to

[25] Formerly the Central Flow Management Unit (CFMU).

avoid the relevant delay. The CAA therefore proposed:

- a bonus rate for C3 that would allow the maximum bonus to be earned if the impact score was zero and the traffic was as forecast in 2015[26];
- a penalty rate for C3 equal to the bonus rate;
- a penalty rate for C4 equivalent to that applied in RP1 adjusted for inflation.

4.42 These would subject to the constraints that the maximum bonus for C3 is 0.75% of revenue and the maximum penalty for C3 and C4 combined is 0.75% (together with the constraints for C2 these will sum to 1%). A summary of the maximum bonuses and penalties is set out in Figure 4.10: UK maximum penalty and bonuses for each incentive as percentage of revenue.

Figure 4.10: Summary of Max Bonuses & Penalties

Term	Maximum bonus	Maximum penalty
C1 (FAB)	Trigger	Trigger
C2	25%	25%
C3	75%	50%
C4	N/A	25%

Source: CAA

4.43 In response to the draft Performance plan NERL has argued that:

- the C3 target and thresholds should be set with a greater uplift factor between the weighted C3 metric and the equivalent unweighted C2 metric;
- there should be a greater allowance of days which can be exempted from the C3 scheme because of the volume and complexity of changes that will be made;

[26] The bonus rate is fixed for every year of RP2 calibrated based on 2015 which has the lowest expected traffic and would therefore be the most constraining year. The same rate in real terms would however be applied for all years irrespective of traffic.

- the C4 penalty threshold should be raised by at least 20% to reflect the difference between the NERL and EUROCONTROL basis of measurement;
- the level of performance at which the maximum penalties become payable for C4 target penalty cap should be raised to the equivalent level in RP1.

4.44 The CAA has decided:

- to confirm that the factor used for the uplift of targets and thresholds between the unweighted C2 measure and the weighted C3 measure will be as used in the draft Performance Plan. The CAA considers that this is an issue of judgement as to the appropriate period over which to observe the relationship between the C2 and C3 measures. The CAA considers that it had used an appropriate period in the draft performance Plan.
- that it should make the increase in the allowance of exempt days for system changes to 75 days over the five years (draft PP included an allowance for 50 days). These will continue to be subject to the governance applied in RP1.
- to make an adjustment to the penalty threshold of the C4 measure. In deciding to make this adjustment, the CAA acknowledges that as the C4 penalty threshold is derived from the equivalent threshold in RP1, it is logical to apply an adjustment for the expected difference of measurement between the two periods.
- not to recalibrate the C4 penalties so that the maximum penalties would become payable at an equivalent performance to RP1 as to do so would dilute the rate of penalties for any relevant level of poor performance given the SES Performance Regulation constraints on the maximum penalty.

4.45 Further details of C3 and C4 and the effect of recalibration due to the small change in the reference values and the above are provided in Appendix C.

CHAPTER 5

Environment

SES Requirements

5.1 The environment KPA includes two KPIs - horizontal en route flight efficiency of the actual trajectory (KEA) - applicable at FAB-level; and horizontal en route flight efficiency of the last filed flight plan (KEP) - applicable at the Network Manager level and not considered further in this document. The KEA is defined as:

- part of the actual trajectory derived from surveillance data and the achieved distance, summed over all IFR flights within or traversing the local airspace;
- 'en route' refers to the distance flown outside a circle of 40NM around the airports;
- where a flight departs from or arrives at a place outside the local airspace, only the part inside the local airspace is considered; and
- 'achieved distance' is a function of the position of the entry and exit points of the flight into and out of the local airspace. Achieved distance represents the contribution that these points make to the distance used in the Union-wide indicator. The sum of these distances over all traversed local airspaces equals the distance used in the Union-wide indicator.

5.2 The regulations require an incentive to be set for the environmental KPA in RP2; they allow but do not require this to be a financial incentive.

FAB Target

5.3 The UK Ireland FAB has a number of particular issues with this KPI. For example:

- In 2009, the IAA removed all impediments to user preferred trajectory that were under the control of the IAA in Irish en route airspace, removing the airway structure from the en route airspace and thereby changing its nature to free route. There is therefore very limited scope for a reduction in what little variance from optimum routeings remains;
- The big improvements in flight efficiency in UK airspace over RP2 are expected to arise from a major redesign of airspace around London (LAMP) and to a lesser extent in the Northern Terminal Control Area (NTCA). The expected gains in flight efficiency, amounting to £180 million p.a. by the end of RP2 are expected to arise as much from improving vertical trajectories as horizontal trajectories, some of them within 40NM from airports. It is conceivable that some worsening of the KPI for horizontal route extension outside 40NM may be consistent with the wider gains from all sources.

5.4 Nevertheless, the UK and Ireland have decided to adopt the indicative targets submitted to the SSC in December 2013 as set out in Figure 5.1 below. This is, however with the provisos that:

- No financial incentives shall be attached to horizontal flight efficiency in RP2 (although the UK proposes to continue financial incentives on 3D flight efficiencies - see paragraphs 5.8 - 5.44 below);
- The ANSPs shall be required to report to their respective NSAs in years where these targets are not met, setting out:
  - The extent to which there remain substantial horizontal flight inefficiencies to be addressed;
  - The extent to which there have been any exceptional events or uncontrollable factors, and the extent to which these factors have affected the ANSPs' ability to meet the target;
  - The extent to which achieving additional flight efficiencies would prejudice greater gains elsewhere;

- The scale of flight efficiency benefits (for UK, including vertical trajectories and benefits within 40NM of airports) generated since the start of RP2. For UK, this may include a quantification of savings in fuel burn.

- The UK and Irish NSAs would expect to consider performance against this wider picture of benefits.

Figure 5.1 UK-Ireland FAB target for KEA

	2015	2016	2017	2018	2019
UK-Ireland Target	3.36%	3.27%	3.18%	3.09%	2.99%

Source: CAA, IAA SRD

Ireland

5.5 In 2009, all impediments to user preferred trajectory under the control of the IAA were removed from Irish en route airspace. The ENSURE project removed the airway structure from the en route airspace, thereby changing its nature to free route. Aircraft operators may choose to flight plan the great circle track from entry point to exit point. In theory, there is no horizontal flight inefficiency in the Irish airspace.

5.6 In practice, there can be a number of reasons that the actual route flown will vary from the user preferred trajectory:

- Pilot-requested weather avoidance
- User-selected flight planning away from great circle route to take advantage of more favourable upper winds
- Avoidance of active Danger Areas which penetrate upper airspace
- ATM direction for reasons of maintaining minimum separation

5.7 For the vast majority of time, these combined reasons amount to a very marginal distance between actual trajectory and great circle route, so therefore as Irish en route airspace is now free route, there are no further opportunities to improve en route horizontal flight efficiency within the airspace. Ireland will however, subject to their economic viability and sustainability, leverage future technological developments (e.g. 4D trajectories) as they become available to ensure the optimisation of KEA and will support efforts to improve efficiency at FAB airspace level, with a view to delivering FAB-wide

improvements.

UK Incentives on the 3Di Metric

Background

5.8 The objective of a metric based on flight path efficiency is that it acts as a proxy indicator for fuel inefficiencies in flight paths flown within UK airspace. Therefore, it provides a mechanism by which NATS can be incentivised to deliver optimal flight paths, in order to reduce customers' fuel burn.

5.9 In RP1, NATS introduced the 3Di metric, which is based on a linear regression model incorporating flight path inefficiencies in the vertical plane as well as horizontal. The modelling is two-stage and is based on a sample of flights for which the estimated fuel inefficiency due to flight path is regressed upon the various components of flight path inefficiency. The resulting coefficients are then applied to flight path inefficiencies, and a "3Di score" estimated for each flight in the year using UK airspace. The annual average of these scores ("the 3Di metric") provides an objective measure to which financial incentives can be attached. The annual 3Di metric is effectively an index, which is more informative as a comparator rather than an absolute number.

5.10 In Ireland, the airlines are already able to choose the trajectory through the airspace which is most suited to their needs. To date, use of a metric such as 3Di has not been raised as an item of interest through the IAA's Customer Care programme (an NSA requirement on the ANSP). Additionally, there would be a cost to the ANSP (and consequently to the customers) to access/procure a suitable tool. However, as various technological opportunities to evaluate vertical efficiency present themselves (including, but not limited to 3Di), and subject to their economic viability and sustainability, the NSA will consider on a case by cases basis lending support to efforts to improve efficiency at FAB airspace level, with a view to delivering FAB-wide improvements. While placing a 3Di target on the ANSP is not currently justified, the NSA will encourage use of an appropriate tool at any stage in the future where evidence suggests it will be of benefit to users. In any case, all parties are aware of the importance of vertical flight efficiency, and even without a relevant tool or metric the ANSP will always be expected to aim to provide the most efficient flight profile.

Use of 3Di metric in RP1

5.11 In RP1, the model coefficients were estimated using a sample of flight data from 2009, and comprised 7 explanatory terms (horizontal, descent, climb, cruise and interactions between the horizontal and three vertical flight efficiency components).

5.12 Figure 5.2 below shows the targets and performance of the 3Di score in RP1.

Figure 5.2: RP1 3Di targets and performance

Year	Actual	Par value	Deadband
2012	23.9	24	+/-3
2013	23.7	24	+/-3
2014	TBC	23	+/-3

Source: CAA

Use of 3Di metric in RP2

5.13 For RP2, the model has been re-estimated from RP1 to:

- reflect the most up-to-date flight data available (2013);
- incorporate currently available improvements to flight path efficiency measurements, (as used in RP1 for NATS' internal reporting);
- reflect further improvements in data and input processes which better characterise network performance by more accurately identifying inefficiency; and
- improve the predictive accuracy of the model by regenerating the coefficients based on the most recent data and processes, and removing interaction terms from the model where they do not add substantially to the predictive capability of the model, and do not appear to be robust over time.

5.14 In order for incentives on the 3Di metric to operate effectively, it is important that comparisons of the metric over time can be made. With this in mind, NATS will be required to maintain a consistent methodology throughout the RP2 period in terms of the calculation and the input measurements which could affect the value of the 3Di metric.

5.15 Following the draft Performance Plan publication, NATS has developed a revised 3Di model incorporating the measurement and modelling changes set out in paragraph 5.13. This revised model (referred to hereafter as the "RP2 model") is used here to reset the RP2 targets with the intention that the targeted performance trajectory will be equivalent to that set out in the draft Performance Plan. The absolute levels of the metric par values have changed due to the increased accuracy of measuring various aspects of the model inputs. However, best endeavours have been made to set these revised targets at such levels that any changes are a reflection of recalibration to the model only, and not a variation in the targeted performance improvements, as set out previously.

5.16 Appendix F explains in more detail the changes to the model and sets out the new coefficients estimated for the RP2 model.

5.17 If NATS wishes to make further measurement or methodological changes to the model in RP2, these will not be incorporated into the regulatory reporting, and will be restricted to NATS' internal use only. This is necessary in order to maintain the consistency of the regulatory time series and avoid any discontinuities which are not related to actual performance changes, and mitigate the risk of unmerited bonuses or penalties.

5.18 Where unavoidable changes to the input measurements occur as a by-product of operational developments (for example, changes to the radar processing data), and these cannot be implemented in a manner which allows for parallel reporting, the CAA would expect to be fully appraised of such changes prior to implementation. The Annual Review process (as used during RP1 and revised as per paragraphs 5.36-5.39) will indicate whether the change has a material impact on the 3Di metric estimated.

5.19 Initial par value targets and "deadbands" were set out in the draft Performance Plan, with the intention of being reviewed prior to the final decision to take account of :

- A. Impact of the model development on targets
- B. Responses to the draft proposals

5.20 The impact of these on the draft proposals has been reviewed separately in the following 2 subsections:

A. Impact of the model development on targets

5.21 Processing the 2013 data using both the RP1 and RP2 model shows that the absolute level of the 3Di metric for 2013 would increase from 23.7 to 30.7 under the new model. In terms of understanding this increase, it is important to recognise that the metric itself is an index rather than an absolute physical measure, and its value is in tracking relative movements. The reason for the step-change is as a result of changes to the measurement inputs rather than any change in actual performance.

5.22 Bearing this in mind, the par value targets as set out in the draft Performance Plan have been transformed such that under the new model the targeted values will imply the same level of performance. Both NATS and the CAA undertook their own analysis of the 2013 daily 3Di scores under both the old and new models, in order to ascertain the most appropriate method of transforming the 3Di values whilst maintaining their performance equivalence. The proposed transformations are explained in more depth in Appendix F.

5.23 Figure 5.3 below shows the draft par values and compares the proposed transformations over the RP2 period - this indicates that applying the CAA's approach to transforming the draft proposals means that the final profile is closely in line with the revised proposal by NATS (despite the different starting points). However, the CAA does not consider this to be a reduction in the targeted performance, rather a difference in our understanding of the best method of transforming values under the old model to align with the new model.

Figure 5.3: Comparison of par values from draft proposals to final

	CAA draft proposal par values	**CAA final par values**	NATS original proposal par values	NATS transformed proposed par values
2015	22.5	**29.7**	23	30
2016	22.0	**29.3**	23	30
2017	21.5	**28.9**	22	29
2018	20.5	**28.1**	21	28
2019	20.0	**27.7**	21	28

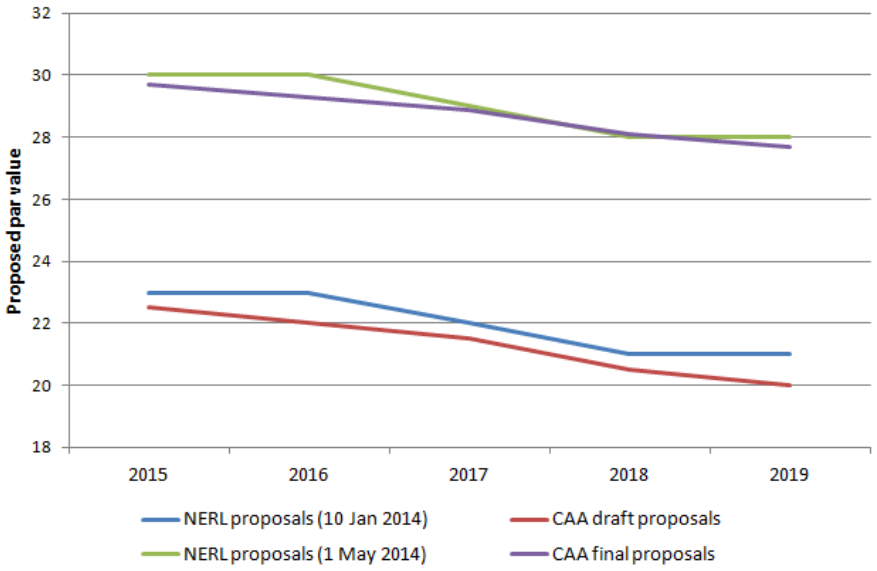
Source: CAA and NATS

5.24 The final targets have been set based on:

- review of the 3Di performance in RP1 for 2012 and 2013 under the previous model, and also under the revised RP2 model;
- a reflection of forthcoming operational improvements which should generate fuel savings for customers and were included in the initial forecast 3Di profile as set out by NATS in their January 2014 proposals; and
- best endeavours to transform the targets set under the existing RP1 model to those representative of equivalent performance under the revised RP2 model.

5.25 Figure 5.4 below shows the 3Di par value trajectory over RP2, for both the original and final values.

Figure 5.4: Proposed 3Di par value improvement trajectory



Source: NERL Proposals for RP2 En route Capacity and Environment Targets and Incentives, 10 January 2014; CAA draft Performance Plan, NERL proposals 1 May 2014.

B. Responses to draft proposals

Level of par values and performance targeted

5.26 NATS Trade Unions (NTUS) and NATS both challenged the proposed profile of the 3Di par values over the course of RP2. However, as indicated above, the differing approaches to transforming the draft targets under the revised model have brought the NATS and CAA

profiles closer in line with each other, although the CAA does not consider this to be a reduction in the performance targeted. The profile has been set with the intention of encouraging improved performance by NERL, however, the use of a deadband aims to avoid undue bonuses/penalties falling due.

Width of deadband

5.27 The airline community expressed concern over the actual incentive properties of the metric and requested that the CAA review the proposed deadband. GATCO and NTUS noted they had no objections to the deadband.

5.28 In response to the airline request, the CAA has undertaken further analysis to review the proposed width of the deadband. This analysis focused on the potential statistical variation in the 3Di metric (i.e. differences in the value recorded which are not the result of changes in underlying performance, but due to the use of an estimating model). Appendix F gives further information on this analysis and the findings thereof.

5.29 To recognise the reduced variation of the revised model and the relatively low level of expected variation in the annual mean, the deadband has been reduced from +/- 10% to +/- 5% (of which approximately half is estimated to relate to statistical variation due to the modelling used in the calculation, and the remainder to actual changes in performance which will not attract either bonus or penalty).

Cap and collar (boundaries at which maximum bonus and penalty accrue)

5.30 Whilst GATCO indicate support for the proposed +/- 33% 'cap' and 'collar', NTUS do not consider it to be at an appropriate level on the basis it appears arbitrary. NATS argue that the levels should be set equivalent to the best and worst daily performance in RP1.

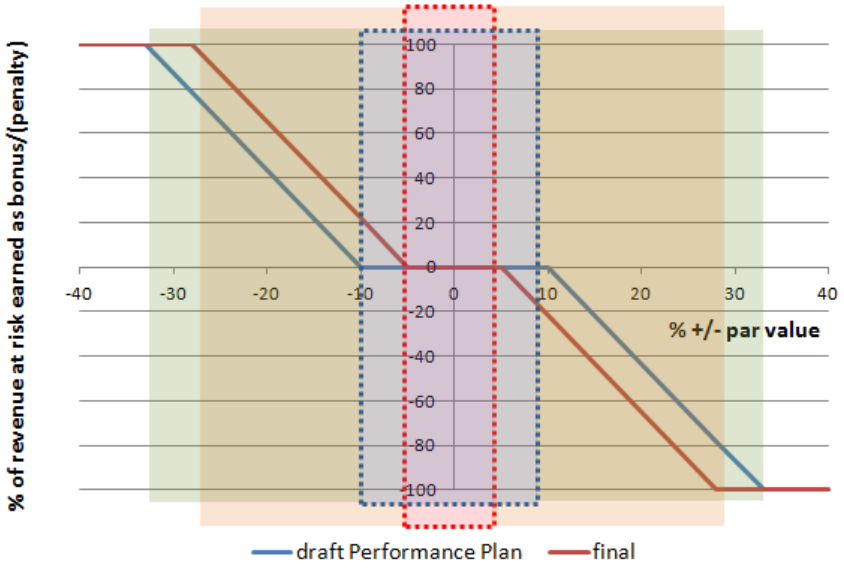
5.31 The 3Di score is an annual metric, calculated as the average across all the flights in the year, whereas a daily minimum or maximum represents an extreme value. Reviewing the 2013 daily scores using the RP1 model indicates that the likelihood of the daily score being +/- 33% of the mean is around 3%.

5.32 In line with the reduced deadband and the increased nominal value of a single unit of the 3Di index, the cap and collar have also been adjusted to maintain the draft proposal for the intended rate of

incentive per nominal unit of the annual 3Di metric.

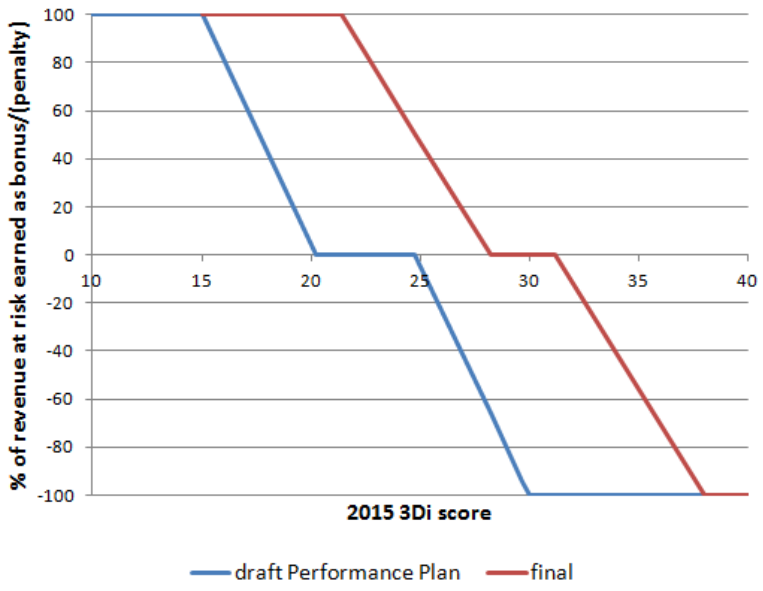
5.33 The cap/collar boundary is reduced to +/- 28% of the revised par value, giving a range over which the incentives apply which is 23% of the par value, as per the draft proposals. Figures 5.5 and 5.6 below illustrate the shift in the deadband and cap/collar from the draft proposals, first from a proportional perspective (Figure 5.5, where there is a tightening of the deadband and cap/collar boundaries, but equivalence of par values), and second using absolute values (Figure 5.6, where the change in nominal values leads to a shift to the right).

Figure 5.5: Bonus/penalty as proportion of total revenue at risk, revised deadbands, cap and collar as proportion of par value



Source: CAA

Figure 5.6: Bonus/penalty as proportion of total revenue at risk, revised deadbands, cap and collar at absolute levels for 2015



Source: CAA

Traffic modulation

5.34 NATS' response to the draft Performance Plan proposed that the 3Di targets should be modulated if traffic deviates above or below base case traffic forecasts by more than 4%. NTUS also noted the planned traffic increase may make reduction in 3Di more difficult to achieve.

5.35 The CAA has reviewed 2013 daily 3Di scores alongside traffic throughput and has not found evidence of a material correlation between the two variables. As such, there is no proposal to modulate the targets for traffic.

The Annual Review process

5.36 The Annual Review process tests the robustness of the defined regulatory model. This review requires NATS to use a sample of at least 50,000 flights in the year to re-estimate the model according to the agreed formulation (i.e. a linear regression with the same terms) and to use this to calculate the test 3Di score for the year. If this generates a test 3Di score which when compared to that reported using the RP2 model, is outside the specified boundaries (see paragraph 5.38), the test will be deemed to have failed. If the metric were found to fail the Annual Review, no penalties or bonuses would be levied for the year (and likely following years would also fail if the failure resulted from a step-change which rendered the RP2 model unsatisfactory). If the test fails in two consecutive years, the 3Di

incentive is withdrawn for the remainder of RP2.

5.37 The Annual Review process will reflect the revised proportionate approach to the deadbands too, and the RP1 "knockout" of +/- 3 (i.e. within 3 units of the par value for the year) will be replaced by a percentage of the par value for the year.

5.38 The proposed new test boundaries will be +/- 8% (of the reported 3Di metric for the year). This change in the setting of the test boundaries is intended to maintain the robustness of the Annual Review from the original 3 point test based on a par value of 24, but take into account the changes in the revised model outputs. With par values reducing substantially over RP2, it is appropriate to redraw this test with a % "knockout" parameter rather than a parameter defined in units.

5.39 Further detail on the supporting analysis for this change is shown in Appendix F.

Summary of 3Di incentives for RP2

5.40 The initial par values set out in Figure 5.7 are derived from the draft par values as explained in paragraph 5.24, and the deadbands per paragraph 5.29.

Figure 5.7: Regulatory targets for 3Di in RP2

	Par value	Annual change in par value	% annual change in par value	Dead band	Lower bound	Upper bound
2015	29.7			+/- 5%	28.2	31.2
2016	29.3	-0.4	-1.3	+/- 5%	27.8	30.8
2017	28.9	-0.4	-1.4%	+/- 5%	27.5	30.3
2018	28.1	-0.8	-2.4%	+/- 5%	26.7	29.5
2019	27.7	-0.4	-1.4%	+/- 5%	26.3	29.1

Source: CAA

5.41 The maximum bonus and penalty payable in any year shall not exceed a maximum of 1% of NERL's en route revenue from user charges for the given year, and will be paid/recovered in year n+2.

5.42 The bonus and penalty per unit 3Di below or above the deadband will be calculated as the maximum available spread evenly per unit between the deadband and maximums (cap and collar, as explained

in paragraph 5.33), as calculated in Figure 5.8 below.

Figure: 5.8 Maximum bonus and penalty limits

	Final par value	Lower deadband, -5%	Upper deadband, +5%	Max bonus level ('cap'), -28%	Max penalty level ('collar'), +28%	Bonus/penalty per unit 3Di outside of deadband
2015	29.7	28.2	31.2	21.4	38.0	R/6.8
2016	29.3	27.8	30.8	21.1	37.5	R/6.7
2017	28.9	27.5	30.3	20.8	37.0	R/6.7
2018	28.1	26.7	29.5	20.2	36.0	R/6.5
2019	27.7	26.3	29.1	19.9	35.5	R/6.4
Note: R = revenue at risk = 1% of NERL's en route revenue from user charges						

Source: CAA

Future environmental incentives

5.43 Looking forward to RP3, as technology and processing capability continues to improve, the CAA hopes that the 3Di metric can evolve, and be based on a more direct calculation on a flight-by-flight basis. It is anticipated that this would take the same form as the fuel inefficiency values currently do in the modelling samples – that is, an estimate based on the excess fuel burnt for a given flight path compared to that for an optimal flight path. Using a more accurate estimate of fuel inefficiency should allow for more precise and detailed review of performance at a granular level, for example, comparing results by airline or by route.

5.44 If this goal were achieved, the use of a regression model which looks at how the various different aspects of the flight path contribute to fuel inefficiency would remain valuable to NATS to help guide operational decision-making, and should in turn help achievement of future fuel efficiency targets.

UK Transition Altitude (TA) target setting

5.45 A harmonised TA of 18,000 ft will enhance safety and flight efficiency, through standardisation and simplification of airspace structures and altimeter setting procedures, and provide the foundation for future environmental benefits, such as improvements to the vertical profiles

of aircraft arrivals and departures. It is a key platform for future airspace and operating concepts through programmes such as SES, SESAR, FAS and the UK-Ireland FAB, and is specifically an enabler for the LAMP and the NTCA Development Plan.

5.46 The NERL RP2 business plan investment programme includes provision for the implementation of a harmonised TA of 18,000 ft.

5.47 To complement the capex provision, and mindful of the associated environmental benefits, the CAA proposes to incentivise NERL for the timely implementation of the harmonised TA in the London and Scottish FIRs, as part of the overall UK-specific environment incentive mechanism for RP2.

5.48 In December 2013 the FAS Deployment Steering Group decided to proceed with the implementation of a UK TA of 18,000ft (see IN-2014/033) with a view to implementation by the end of 2017. The specifics of the Concept of Operations to be developed to support this TA level would be subject to a further State consultation planned for November 2015 through to February 2016.

5.49 Following the consultation on the draft PP, where the TA target was set at end of 2017, as part of the final PP the CAA has revised the target to the end of the first quarter of 2018.

Incentive mechanism

5.50 For the first three years of RP2, NERL will be eligible for a bonus for performance resulting in a 3Di score lower than 28.2 in 2015, 27.8 in 2016, and 27.5 in 2017; or a penalty for performance where the 3Di score exceeds 31.2 in 2015, 30.8 in 2016, and 30.3 in 2017. The bonus or penalty shall not exceed a maximum of 1% of NERL's en route revenue from user charges for the given year, and will be paid/recovered in year n+2.

5.51 In 2018 to the end of RP2, NERL's eligibility to earn bonuses will be contingent on the successful implementation of a harmonised TA of 18,000 ft by the end of Q1 2018. Furthermore, NERL will be liable to pay penalties equal to 1% of its en route revenue from user charges from Q2 2018 and each subsequent year of RP2, until a harmonised TA of 18,000 ft is implemented. If a harmonised TA of 18,000 ft is implemented by the end of Q1 2018, NERL will be subject to the 3Di bonus and penalty mechanism described above (paragraphs 5.8-5.42)

in 2018 and 2019.

5.52 The implementation of a harmonised TA of 18,000 ft is subject to the satisfactory outcome of the consultation planned for winter 2015/16, and regulatory safety approval from the CAA. Where the CAA does not provide the necessary safety regulatory approval, despite the best efforts of NATS, the incentive penalty mechanism associated with a harmonised TA of 18,000 ft shall not apply.

5.53 NATS disagreed with linking incentives for 3Di with successful implementation of TA. NATS considered it will expose them to increased financial risk based on the implementation of a project that is significantly dependent on external parties.

5.54 The CAA notes that the target date has been moved from end of 2017 to end of Q1 2018 after consideration of points raised by NATS and NTUS (see Chapter 11 for details of stakeholder responses) during consultation of the draft PP.

5.55 Furthermore, in order to mitigate some of the external risk to the FAS programme, a small FAS Deployment Facilitation Fund has been included in the UK en route rate as part of the final PP. This recognises the very significant benefit to users from elements of FAS, the capex programme planned by NERL and the potential for relatively slow provision of work by third parties to cause delay. This is discussed in more detail in Chapter 6 paragraphs 6.86-6.89.

5.56 TA is a project crucial for the delivery of LAMP and is in line with obligations under the Future Airspace Strategy. The CAA maintains its view that NERL's ability to earn bonuses for 3Di performance should be subject to meeting the target for TA harmonisation. The likelihood of 3rd parties not co-operating can be mitigated by NATS' adopting an open and engaging approach.

5.57 NATS and NTUS considered that incentivisation of LAMP would be more appropriate than the incentivisation of TA, which is just an enabler of LAMP. However, no constructive proposals were made on how to incentivise the delivery of LAMP. The CAA maintains its view that TA can be incentivised with more certainty than a wider project such as LAMP.

UK FAS Incentive

5.58 The CAA also intends to hold NERL accountable for the delivery of key elements of FAS - such as harmonisation of the TA, terminal airspace redesign under the LAMP and implementation of the European ATM Master Plan - through a NERL Licence Condition under the Transport Act 2000. Achievement or otherwise of key FAS deliverables, for which NERL is a major contributor, will be assessed against project plans for specific programmes. NERL will submit periodic reports to the CAA for assessment by an Independent Reporter. The CAA considers this approach will provide a significant reputational incentive on NERL, by providing a clear focus on delivery of planned and funded investments by NERL.

5.59 In Appendix D[27] of its response to the draft PP NATS considered that a new Licence condition holding it accountable for the delivery of key elements of FAS would not be fit for purpose and instead proposed that the reporting requirement should be met through the existing performance regime and SIP reporting. NATS considered prioritisation should be on TA/LAMP, not on the whole FAS/ATM Master Plan, which is broad and less precisely defined. NATS felt that additional reporting should be incorporated in the SIP process and agreed between NATS and CAA, and not just imposed by the CAA.

5.60 In this Performance Plan, the CAA maintains its *intention* to introduce the aforementioned Licence condition but notes that this will form a part of a separate process on which NATS and other interested parties will be appropriately consulted. The CAA will also consider NATS submission in Appendix D as part of this process.

Ireland Transition Altitude (TA) target setting

5.61 The Irish NSA has not set a target for the Irish ANSP with regard to transition altitude. However, we noted the intention of the UK and Ireland to implement a Harmonised TA of 18 000ft across the entire FAB airspace. The stated objective of the Irish ANSP to implement a harmonised TA with the UK by 2018 is a key element and enabler of

[27] Available online from: http://www.caa.co.uk/docs/5/NATS%20Response%20to%20Draft%20UK%20Ireland%20RP2%20Performance%20Plan%20April%202014%20(2).pdf (from page 65).

this.

CHAPTER 6

En Route Cost Efficiency UK

UK Target

6.1 Figure 6.1 summarises the UK en route cost efficiency target.

Figure 6.1: Summary of the UK en route cost efficiency target

	2015	2016	2017	2018	2019
DC nominal (£000)	£686,096.0	£686,856.9	£689,731.6	£682,288.3	£672,799.2
Inflation index	106.5	108.5	110.7	112.9	115.2
DC real (£000)	£644,287.4	£632,975.4	£623,161.4	£604,349.5	£584,259.2
Total Service Units (000)	10,244	10,435	10,583	10,758	10,940
Real DUCs	£62.89	£60.66	£58.88	£56.18	£53.41

Introduction

6.2 The performance regulation requires a target for en route cost efficiency for en route service to be expressed in terms of the determined unit costs (DUCs) at State level and in local currency. The DUC is the ratio between the en route DC and the forecast traffic in the charging zone expressed in total en route service units, expected during the period in the performance plan.

6.3 The DC in relation to UK charges is built up from the following components:

- NERL;
- MET;
- DfT/Eurocontrol; and
- CAA.

NERL

Background

6.4 The NERL component of the February draft performance plan (PP) was based on the CAA's assessment of various evidence:

- the revised business plan (RBP) issued by NERL in October 2013 following a process of customer consultation mandated by the CAA;
- revisions to the RBP to update for revised STATFOR traffic and IMF inflation forecasts and to reflect an update to opex costs in 2013 and 2014;
- an "RP2 Airline Community Special Interests Paper" further elaborating on issues identified at the end of customer consultation on issues where they held different view to NERL;
- CAA commissioned consultants studies on:
  - non-staff operating expenditure (opex);
  - staff opex;
  - pensions;
  - the cost of capital;
  - capital expenditure (capex);
  - cost allocation[28].

6.5 The CAA took all of the above into account in developing the draft performance plan in respect of NERL. The proposals for NERL's costs in the draft performance plan made interventions to reduce costs relative to the NERL RBP in respect of the following areas:

- Staff costs: no real increase in salaries and no wage drift as part of pay progression;
- Modification of the defined benefit pension scheme:

[28] These studies are discussed briefly in Appendix A.

- passing through 80% of the difference between actual contributions and contributions assumed as part of the determined costs when the actual contributions are greater than the assumed contributions;
- passing through 100% of the difference when the actual contributions are less than the assumed contributions;
- contributions assumed for 2018 and 2019 should be reduced by 10%.
- excluding the costs assumed for the Employee Share Scheme;
- excluding the allowance for operating expenditure contingency; and
- reducing the allowance for cost of capital.

6.6 Responses to the consultation are published on the CAA website.[29] The points raised are addressed against each of the subsections considered below and a schedule of the CAA response to each point is set out in Chapter 11.

Scope

6.7 NERL's costs for the purposes of the draft PP relate to services provided in the UKATS area. They do not include Oceanic services which are price controlled but regulated outside the scope of SES regulations. There will be a consultation process specific to the Oceanic services provided by NERL after the final SES performance plan has been submitted to the Commission at the end of June 2014.

Figure 6.2: Overview of NERL's operations

<table>
<tr><td colspan="4">NERL</td></tr>
<tr><td colspan="3">UK Air Traffic Services</td><td rowspan="3">Oceanic</td></tr>
<tr><td colspan="2">En route (UK) Business</td><td rowspan="2">Other permitted business</td></tr>
<tr><td>Eurocontrol</td><td>North Sea helicopters</td><td>London Approach</td></tr>
</table>

Source: NERL Regulatory Accounting Guidelines

6.8 The attribution of costs to EUROCONTROL is based on a single-till approach with revenue from North Sea Helicopters, London Approach

[29] http://www.caa.co.uk/default.aspx?catid=5&pagetype=90&pageid=16033

and other permitted services offset from costs. This raises two significant issues relating to London Approach and the treatment of the contract with the MoD and in particular the treatment of military service units.

London Approach

6.9 NERL provides a service for traffic using the five main airports in the London area from the area control centre at Swanwick. This service – London Approach – has characteristics of both an en route and terminal service. In October 2013 the CAA consulted on the most appropriate regulatory treatment of charges for the London Approach service. The CAA published the reasoning for its conclusions from this consultation alongside the draft PP[30]. The CAA has concluded that it will pursue the following for the UK component of the UK-Ireland FAB RP2 performance plan and Option 2 over time as part of an EU-wide solution:

- continue separate charges to users for London Approach;
- recognise that the London Approach service combines elements of both terminal and en route services;
- require a separate charging zone and charging formula to be defined for the separate terminal London Approach charge; and
- continue with the current allocation of costs.

6.10 For the longer term, the CAA supports further work with the PRB and European Commission with a view to ensuring a consistent basis across the EU.

The MoD Contract

6.11 The largest component of other permitted services is the contract under which NERL provides the use of infrastructure to the MoD. This infrastructure is used by military personnel (not included in the NERL cost base) to provide a service to military traffic which generates service units included in the UK total. NERL derives revenue from the MoD that covers a contribution to infrastructure costs only and not the staff costs of providing the service. The approach to calculating the

[30] CAP 1158: Regulatory treatment of London Approach charges in Reference Period 2 (2015-2019) of the Single European Sky Performance Scheme: CAA Conclusions.

DUC required by the regulations is to divide the ANSP total costs service provision by the total service units (civil and military). This, however, would cause a distortion for NERL as the input from the military controllers would not be recovered and this shortfall would be spread over total service units generally. To adjust for this effect, the DUC for civilian flights alone has been derived by netting off the MoD revenues from the cost base and dividing the resulting civilian cost base by the civilian service units.

6.12 However, to make the presentation of DC and service units (SUs) consistent with the approach required under the Performance Scheme, the CAA has added back the determined costs shown in the Figures for NERL an allowance equivalent to the DUC for civilian flights multiplied by the military SUs included in total SUs. (See Figure 6.15.)

Costs of change

6.13 As discussed with NERL, the CAA proposed in the draft PP that, for the purposes of assessing cost efficiency, no reduction would be made to the DC to reflect the costs of change, on the basis that:

- NERL is not proposing to recover these costs over a longer period than RP2;
- they may not qualify as "restructuring costs" which could be netted off from the DC under the definition in the regulations given that they may not be considered to stimulate integrated service provision; and
- it makes no difference to charges in RP2 if these amounts are included in the DC rather than as a separate add on permitted under the Charging Regulation.

6.14 There was no comment on this point from respondents to the consultation and the CAA therefore confirms this approach.

Staff Costs

Staff Numbers

6.15 NERL projected the numbers of staff set out in Figure 6.3 in its RBP.

Figure 6.3: Staff numbers

	Start CP1 2001/2	End CP2	Current Dec 12	End RP1	End RP2	2019 v 2012
Controllers	1,430	1,360	1,275	1,170	1,150	-10%
Operational Support Staff	930	630	565	490	465	-18%
Engineers	1,180	910	850	850	830	-2%
Support & Management	900	660	660	620	585	-11%
Total	**4,440**	**3,560**	**3,350**	**3,130**	**3,030**	**-10%**
Savings v start CP1	-	*-20%*	*-25%*	*-30%*	*-32%*	

Source: NERL RBP

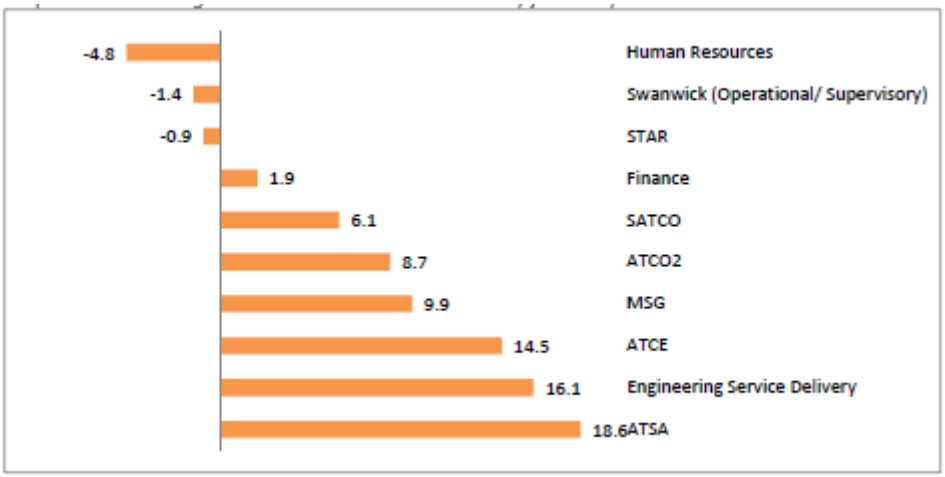
6.16 The CAA considers that this represents a reasonable and realistic profile of staffing over RP2. The CAA is encouraged by the steps that NERL, with its trades unions, has made to make rosters more flexible and better aligned with workload. The CAA hopes to see this continue to evolve. For example, it would expect NERL to adapt appropriately to new technologies and processes as they are developed e.g. through SESAR and FAS as they become available in due course.

Unit Staff costs other than defined benefit pensions

6.17 IDS, the CAA's consultants on staff costs, provided evidence that pay and benefits packages at NERL are relatively high compared to what the market pays for equivalent roles and also that trends over recent years have seen higher increases in average remuneration per full-time employee for NERL than for the economy as a whole.

6.18 Figure 6.4 shows the consultant's estimate of variance for various categories of NERL staff compared to comparator pay for equivalent roles in the market as a whole. A positive estimate of x% indicates that the average reward category for staff in that category is estimated to be x% higher than the average for equivalent roles elsewhere. This Figure excludes the value of the pension benefits which the consultants (at least in respect of the staff in the defined benefit (DB) scheme) found to be more valuable than typical schemes elsewhere.

Figure 6.4: IDS assessment: NERL average total reward (excluding pensions) variances vs. market by job family



Source: IDS - Assessing the efficiency of NERL's total employment costs in RP2[31]

Figure 6.5: Average pay-bill costs per FTE employee (excluding pensions) compared with national average earnings movements

	2009	2010	2011	2012	2013	% change over period
ATCO	79.9	83.1	83.0	94.8	96.7	21.0
ATSA	47.7	51.6	54.2	58.7	55.4	16.1
ATCE	63.1	64.9	64.9	66.0	66.2	4.9
Other	52.8	63.2	59.7	66.9	66.7	26.3
Total	64.1	69.1	68.9	75.9	76.1	18.7
Whole economy AWE						10.8
Private sector						9.8

Sources: IDS calculations based on NERL data, ONS

6.19 In the RBP, NERL assumed that pay rates would increase over RP2 by a margin above CPI. (CPI in 2015, CPI+0.25% for the remaining four years or RP2) with a further increase in pay due to pay progression of 0.30% p.a.

6.20 In respect of the assumptions for the draft Performance Plan, the CAA considered that, based on the analysis in the IDS report, the pay and

[31] Available on the CAA website: www.caa.co.uk

benefits packages at NERL are relatively generous compared to appropriate comparators and that recent trends had been higher for NATS than for the market in general, it would be inappropriate to allow for a level of pay progression as a whole over RP2 in excess of CPI. It therefore made no allowance for a general upward drift in salaries in each category of staff and assumed a steady state where the average seniority of staff remains stable. It therefore considered that while there would be pay progression there would be no upward wage drift. (This is considered further in paragraph 6.28.)

6.21 In its response to the consultation on the draft plan, NATS has challenged the IDS work in a number of areas, based on a review conducted by consultants commissioned on its behalf. In particular, NATS's consultants argue that IDS put too great a value on NERL's staff working less hours per week and having more days annual leave and did not put sufficient weight on: the greater element of bonuses and incentive payments in the market generally; and the benefits of lower sickness and absence levels in NATS compared to other companies. NATS is, however, prepared to accept a revenue allowance for general pay rates linked to CPI rather than CPI+0.25% (subject to re-instating the full allowance for pay progression).

6.22 In terms of the removal of wage drift in pay progression, NATS argued that the removal of pay progression, because it is not affordable under the CAA's proposals, would put at risk the cooperation required by employees, the benefits of which, it argued, far exceed the £8m revenue allowance reduction proposed by the CAA. NERL also pointed to the changes to terms and conditions that have already taken place and the employee and industrial relations risk associated with removing this allowance.

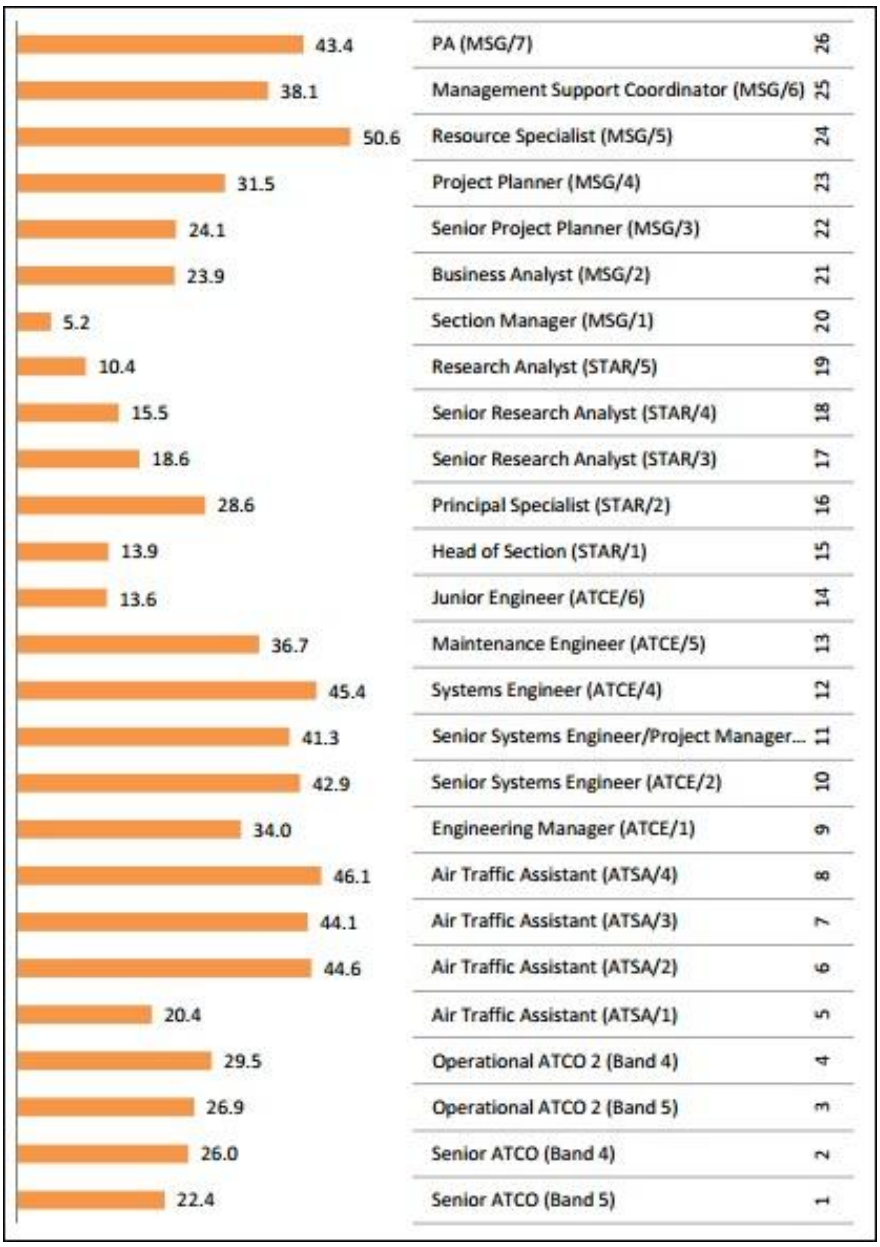
6.23 The Airline Community response argued that the draft Performance Plan proposals do not go far enough to address the current and future pay levels of ATCOs and that even a CPI increase would not be appropriate until salaries fall in line with market rates. It urged CAA to review and act on the current structure of the ATCO labour market.

6.24 The NTUS challenged the proposed amendment to the Revised Business Plan for Staff Costs, citing that it would put NERL staff pay rises behind not only inflation (as measured by RPI) but substantially, behind likely rises in earnings elsewhere in the private sector. It drew attention to a recent Office of Budget Responsibility forecast which

suggests that average earnings are expected to grow faster than CPI inflation this year and keep pace with RPI inflation next year. It pointed out that NERL are contractually obliged to pay progression. It also cited the good labour relations at NATS with no days lost to industrial action in the last 32 years. It argued that the lack of direct comparisons of NERL pay with European ANSPs is a weakness of the IDS analysis.

6.25 The CAA has considered the arguments put forward by the respondents in respect of comparisons of pay and conditions. It accepts that there can be different approaches taken by practitioners in this field to adjust for non pay aspects of benefits. However, in terms of the total benefits package, at least for staff employed before April 2009, a further important element of the benefits package is the protected benefit offered under the defined benefits pension scheme. When the pensions are taken into account the full benefit package for NERL staff appears very generous compared to appropriate comparators. IDS results on this point are set out in Figure 6.6. Differences on the scale shown are clearly robust to taking different assumptions concerning other parts of the remuneration package.

Figure 6.6: NERL total reward vs. market median including pensions



Source: IDS

6.26 The CAA accepts that comparisons of ATCO salaries are hampered by the absence of ATCO market data. While this in part represents a reticence of foreign ANSPs to share detailed data there is also a more fundamental point that most ANSPs operate as public sector monopolies with very little movement of staff between them on the basis of economic signals. So there is little sense of a true market for ATCOs. This is a situation that EASA's common licensing

requirement is intended to address and this may lead to a more active market in ATCOs in the future. However, at the current time the value of such comparisons would be limited.

6.27 In terms of wage drift and pay progression, the CAA reiterates that its proposal not to allow a 0.3% p.a. increase in the salary bill is due to the wage drift element of pay progression rather than pay progression in total. While individual staff progress through pay scales the picture for the company depends upon the relative seniority of staff. For example in a stable state this profile of staff could be expected to be constant as the number of new staff entering the bottom of pay scales are matched by staff leaving the company. In practice there can be an element of wage drift by which the seniority and grading of staff as a whole drift upward. It is this element of wage drift that the 0.3% addresses.

6.28 Where this drift occurs because of a particular pre-existing profile of staff then it may be subject to contractual obligations and any change in the status quo would be part of a negotiation. In other cases it can result from creating higher graded posts to perform the same work. On balance the CAA believes that NERL should have an incentive to absorb the effects of wage drift.

6.29 The CAA confirms that it will assume no more than CPI growth for pay rates with no further increase to cover the wage drift component of pay progression.

6.30 This does not represent a CAA target for pay. This is not a budget or cap for pay, either collectively or for particular types or grades of staff, nor is it intended to require the company to move to any particular structure. This does not represent any attempt to micro-manage the business.

6.31 On pay, as on other building blocks of the cost targets, the CAA is seeking to be transparent about the assumptions that it has adopted in proposing an overall cost efficiency target as a whole. It is the overall charging controls under the charges regulation that NERL will be expected to meet rather than the intermediate components parts of opex.

6.32 The CAA confirms the intervention to reduce the assumption for increases in staff costs to the rate of CPI.

Pensions

6.33 The CAA proposed the following interventions to vary the Draft Performance Plan from the RBP put forward by NERL:

- passing through only 80% of the difference between actual contributions and contributions assumed as part of the determined costs when the actual contributions are greater than the assumed contributions (but continuing to pass through 100% of the difference when the actual contributions are less than the assumed contributions).
- reducing the contributions assumed for 2018 and 2019 by a further 10%. These two years are after the next valuation of the scheme so the level of contribution is more uncertain. Should the contributions required be higher than these revised allowances, then NERL would be able to subsequently recover 80% of the shortfall in subsequent reference periods. NERL would nevertheless have a relatively small amount at stake to encourage it to lean against any cost pressures.

6.34 This led to a reduction in the DC in aggregate in the draft PP compared to the RBP of £16.5 million in 2012 prices over RP2. (Most of this difference is, however, only a timing issue as 80% of any difference would be recoverable in subsequent reference periods.)

6.35 A number of respondents made vigorous representations on the subject of pensions. NATS and the CAAPS trustees were concerned about the effect of the move away from 100% pass-through and its effect on certainty with which the company could service its pension commitments (known as the employer's covenant). NERL cited that this could also increase the likelihood of a future reduction in the company's credit rating and potentially, an increase in the cost of its debt and cost of capital. NATS and the CAAPS trustees argued that the asymmetric pass-through may have the opposite effect to the regulator's intentions, as it may lead the trustees to feel that they should mitigate the risk introduced by this weakening of the employer covenant by accelerating the de-risking of the investment strategy which would increase the ultimate cost of the scheme to the detriment of users. NTUS emphasised the detrimental changes to pensions which their members had agreed to already during CP2 and CP3. Revisiting the terms and conditions after the deficit starts to reduce

would be met by a very hostile response and risk industrial action.

6.36 The Airline Community response argued that CAA had not taken strong enough action to limit the liability on pensions to that of a competitive entity. It argued for a maximum contribution rate of 20% in line with the CAA's determination for Heathrow Airport. It also criticised the fact that users have not had access to a statement of the full legal constraints on the scheme although it argued that the CAA has a duty to promote efficiency but no duty to protect this situation.

6.37 Pensions (and in particular DB pensions) represent a significant portion of NERL's staff costs and are a significant issue for all stakeholders.

6.38 The CAA acknowledges that NATS has taken considerable steps to mitigate its future pension liabilities, as discussed in Appendix D. The CAA as regulator stands behind the NERL's covenant to honour its eventual pension commitments. It considers that not to do so would breach its duty to secure that licence holders will not find it unduly difficult to finance activities authorised by their licences. Subject to this, however, it does think it appropriate to consider measured incentives to encourage NERL to continue to mitigate liabilities and the future contributions which ultimately come from users.

6.39 NATS has argued that its previous actions have demonstrated that it has already acted as a commercial entity would and that the exposure of NSL to the scheme acts as a natural incentive to manage its pension liabilities and contributions. It also believed that the stewardship tests established by the CAA in previous control periods were an appropriate incentive. NATS has questioned whether any further incentive is required. It is difficult for the CAA to judge whether NATS would have acted earlier, or gone further in the prevailing circumstances, if it had had a more immediate revenue interest in the outcome. On balance the CAA considers that it is appropriate, going forward, to introduce a very measured mechanism to give NERL such an incentive.

6.40 The CAA considers that the proposed interventions are relatively modest and should not have a significant impact on either the employer covenant or lender sentiment on the basis that:

- A large percentage (80%) of any adverse variance during RP2 would be returned to NERL in future charges.
- The 20% of adverse variances not passed through relates only to the sums within a reference period. In practice this means that it relates only to the latter years of RP2 based on the next valuation of the scheme. The amounts at stake are therefore likely to be relatively small.
- At the start of RP3 all the expected contributions for RP3 would be taken into accounting setting the determined costs for RP3.

6.41 The CAA has considered the robustness of NERL's finances to downside assumptions in the course of RP2 and concluded that NERL would be robust to significant variations in pension contributions. While the change does introduce a small element of financial risk, the CAA does not consider that this is such as to have a significant adverse effect on the cost of capital or debt ratings. While it will be for the Trustees of the CAAPS to gauge the effect on the lender covenant, the CAA considers that this should be very small given the CAA's continuing commitment to stand behind the covenant and would not justify any de-risking of the investment policy beyond what is required to reflect the maturing age profiles of the existing members of the scheme.

6.42 Both NATS and the Airline Community have raised issues relating to the past evolution of contributions to the scheme. NATS has argued against the asymmetry of the scheme whereby users would continue to receive the return of 100% of beneficial variances at least partly on the basis that they have received benefit from contributions that were lower than service costs in CP1 and CP2. The Airline Community has argued that users should not be liable for any deficit repair costs at all as these arose because NATS was late in taking actions to mitigate the deficit. NATS also expressed concern with the lack of a previous signal of policy change in relation to the pension pass-through arrangement. On 10% reduction the assumed contributions in the final two years of RP2 (2018 and 2019), NATS acknowledged that there is uncertainty around projection of pension contributions in later years of RP2 and while not agreeing with the CAA's rationale for proposed reductions, it said it could tolerate the reduction provided the 100% symmetric pass-through is maintained.

6.43 The CAA notes that users did benefit from contributions which were lower than service costs in the past. It would therefore be unreasonable to absolve them from any deficit repair which has arisen in part because of market cycles over long periods. However, users have borne the brunt of the increase in pension contributions in recent years. While there is scope for both adverse and beneficial changes to contributions in RP2, there appears to the CAA to be more scope for improvement in valuation (e.g. due to the higher interest rates that would follow the unwinding of quantitative easing) and it would not seem reasonable for NERL to benefit from these benefits given the high levels of contribution that users have been funding in recent years.

6.44 The CAA does not envisage asymmetric pass-through continuing to be a permanent feature. It would expect to revert to a symmetric basis with less than 100% being passed through at future reviews.

6.45 The CAA acknowledges users' general concerns that pension costs represent a much higher percentage of salaries than is typical in companies with similar schemes or in their own companies. The CAA acknowledges that users would be in a better position to engage on this issue if they had visibility of the relevant legal restraints which protect the rights of existing members of the DB scheme. The CAA invites NATS to release the information that it can, with a view to achieving a shared understanding with users on this issue.

6.46 Based on the expert advice that it has obtained, the CAA is persuaded that the legal restrictions on the Scheme's amendment power broadly prevent an amendment to the Scheme's rules being made to reduce or stop the future accrual of benefits for the pre-existing members of the scheme. The CAA accepts that this precludes NERL from making changes to the scheme on a scale envisaged by users. The CAA considers that in the absence of changes to the scheme itself, placing any dramatic limitation on contributions allowed in user charges would make it unreasonably difficult for NERL to finance its functions and may impact on the continuing provision of services. It therefore considers that in general it should allow a level of contribution to be funded by charges sufficient to remunerate NERL's legal commitments over the long term.

6.47 Our advice did, however, identify a number of liability management options that are still legally possible (or which might arguably be

possible).

- The further reduction in the portion of remuneration considered as pensionable pay (e.g. removing certain allowances or pay increments on promotion). This is a measure which is within NERL's remit, as long as the resulting scheme continues to perform the intention of proving a defined benefit pension based on final salary. Moreover, NATS has already pursued this line through capping pay twice already: the last time as late as 2013.
- Increasing the employee contribution. (The CAA has received legal advice, which is uncertain on the issue and suggests that more analysis is needed; NATS has previously conducted its own further analysis through a QC's legal opinion, to the effect that increasing employee contributions will be interpreted by a Court as reducing employee benefits.)
- A number of more minor areas to maintain challenge on the administration of the scheme.

6.48 The CAA is not prescribing what, if any, further action should be taken (and any further action would be subject to negotiation between management and Trustees, members, and trades unions, as in any comparable situation elsewhere.) The CAA does, however, consider that it is reasonable for NERL to have an incentive to address these issues, subject to the legal constraints upon it.

6.49 In respect of the 10% reduction in the assumed contributions in the final two years of RP2 (2018 and 2019), the CAA acknowledges that this is not based on a detailed analysis of the next valuation of the scheme or of subsequent contributions. The CAA has reduced the amount assumed by a small but significant amount in the knowledge that the majority of this (8 percentage points) is a timing issue where any variance can subsequently be recovered and only a relatively small portion (2 percentage points) is actually at risk. The CAA considers that this is a measured incentive to encourage NERL to continue to act as a commercial company would.

6.50 Based on these considerations the CAA confirms that NERL should bear some of the cost risk on pensions as follows:

- passing through 80% of the difference between actual contributions and contributions assumed as part of the determined costs within the reference period when the actual contributions are greater than the assumed contributions;
- passing through 100% of the difference when the actual contributions are less than the assumed contributions; and
- the contributions assumed for 2018 and 2019 should be reduced by a further 10%.

Other operating costs

6.51 The CAA acknowledges that this is the area of costs which NERL has reduced considerably over the period since it has become a PPP. It has consolidated the number of centres from four to two before RP1 and moved to relatively efficient arrangements for procurement through major integrated suppliers. The scope for further gains is now subject to diminishing returns with quite a high reliance on particular suppliers in some areas. Therefore, the CAA in general agrees with its consultants on these costs, Capita Symonds, that, in the context of diminishing returns over time, NERL's non-staff opex costs are challenging but realistic and achievable albeit with the potential for further modest efficiency gains.

6.52 There is, however, one area of costs which the CAA applied an intervention in the draft Performance Plan compared to NERL's RBP. This was in respect of the costs of the Employee Share Scheme. The draft Performance Plan excluded these costs from opex on the basis below.

6.53 The Employee Share Scheme costs of about £3 million p.a. appeared to be very high given that the scheme is administering only 5% of the equity value of the business. The valuation costs of the scheme are only about £0.1 million pa and other administration costs are absorbed in staff and other costs elsewhere outside this figure. This headline sum therefore relates primarily to:

- an expected increase in total obligation to redeem employee shares as an accrual; and
- the extent to which shares redeemed are then redistributed to employees at less than the underlying value.

6.54 The CAA did not consider that accruing additional value to eventually redeem shares is consistent with the real reduction in the Regulatory Asset Base (RAB) over the course of RP2 or if it is based on any growth in dividends it would seem reasonable for it to be financed from shareholder funds. It also considered that NERL should be incentivised to realise the underlying value of shares when they are redistributed to staff. (There is currently a matching arrangement by which staff receive a free share for each share they purchase.)

6.55 If there were net costs from the scheme in RP2, the CAA considered that these should be absorbed by shareholders or out of the overall staff remuneration allowance.

6.56 A number of respondents addressed this point as if the CAA were hostile to the concept of employee shareholder schemes in general. NATS' response argued that the scheme had been set up at the time of PPP to align employee's interests with shareholders to drive efficiency improvements to the benefits of users, that the absence of a market for the shares meant that the company accrued the eventual cost of repurchasing shares, and that the distribution to employees with matching free shares was a common practice. NATS argued that not to allow these costs to be recovered would be contrary to the findings of its own consultants that employee remuneration was within market and contrary to allowing its shareholders an appropriate rate of return. It also pointed out that CAA had allowed the remuneration of these costs in the past and that this was not an issue highlighted by the CAA's own consultants on non staff costs. It also noted that a significant proportion of these costs were now sunk as a result of actions in previous control periods and could therefore not be avoided. However, NATS recognised that these costs should be added back into opex. It argued that these cost should be consistent with the cost of capital which on the basis of the costs of capital proposed by the CAA in the draft Performance Plan would be £11 million (rather than £13.3 million based on the cost of capital in NERL's RBP). The NTUS argued that the scheme is not anomalous.

6.57 The Airline Community supported the CAA's action in excluding these costs and establishing the principle that they should be remunerated from shareholder funds.

6.58 The CAA stresses that we have never been opposed to the Employee Share Ownership scheme in principle. (For the avoidance of doubt

the word anomalous in the draft proposals was intended to describe the scale and nature of the costs involved rather than the scheme itself.) Our argument has only been about how it is funded. So the stakeholder responses that argued we were pushing for the abolition of the scheme were mistaken. In general we welcome effective partnership between management and workforce and we recognise that both seem currently to see the scheme as important to this. However, our role is limited to ensuring compensation arrangements are efficient, whatever we think about the pros and cons of the scheme it is not for us to set NATS' remuneration arrangements.

6.59 The CAA acknowledges that the distribution of shares to staff at less than the underlying value is not uncommon elsewhere. The CAA also recognises that the costs of this have to be found from somewhere either from some allowance in expected costs passed through to charges e.g.:

- as a separate cost;
- in staff costs;
- possibly as an uplift in ex ante allowed returns (if this is considered a necessary additional cost to achieve the putative returns to the business); or
- from ex post shareholder returns (where the existence of the scheme is expected to increase financial performance beyond what had been assumed in the building blocks).

6.60 The CAA has reconsidered its position on this element of the Employee Share Scheme. It seems reasonable to assume that the current level of performance and the performance in RP2 already takes into account the benefits of the Employee Share Scheme. In these circumstances it would seem reasonable for these costs to funded out of an ex ante cost allowance rather than ex post shareholder returns generally. The CAA therefore proposes to add back this portion into other opex.

6.61 This change should not be interpreted as the CAA accepting the NATS proposition that NERL's staff costs are within market. As set out in paragraph 6.25, the CAA does not consider that the full benefit package is within the market, particularly when pensions are taken into account.

6.62 While the CAA can accept the principle of paying the workforce partly in shares, we do not see why customers should pay more to reflect forward-looking expectations of value. If the shares were traded, any increase in share value would normally be revealed through trading between shareholders, and hence would be paid for by shareholders. We should not expect users to pay, just because there is no public market in the shares (which is itself a shareholder decision). So if it is considered important to mark-up employee shareholders to reflect an accrual in value, this should be paid for by other shareholders.

6.63 The CAA therefore proposes to add back c.50.4% of the remainder that NATS has now estimated the cost of the scheme to represent the cost of redistributing redeemed shares.

Figure 6.7: Allowance for Employee Share Scheme Costs

	2015	2016	2017	2018	2019	Total
RBP	2.1	2.9	2.8	2.6	3.0	13.3
Draft PP	0	0	0	0	0	0
Final PP	0.9	1.2	1.2	1.1	1.2	5.5

Source: NERL RBP and CAA analysis

Contingency

6.64 In the draft Performance Plan, the CAA excluded the allowance for contingency costs of c.£6 million p.a. over RP2 which NERL had provided in its RBP.

6.65 The CAA had allowed a contingency provision in RP1 on the basis that it then believed there was some merit in having a transparent aggregate amount rather than amounts hidden away in the various elements of the plan. In the event NERL has outperformed the expected level of opex in the plan by a comfortable margin even before the contingency provision. The CAA noted that NERL has identified potential areas for additional costs but also recognised that there may also be opportunities for additional savings which will only become apparent in the course of RP2. The CAA stated that as a matter of general regulatory best practice, it does not favour one way allowances for contingencies in opex as this is likely to facilitate costings being padded over and above the best estimate.

6.66 In its response to the draft plan NATS has argued for contingency to

be added back in full, to achieve the outputs envisaged in the RBP, or for half the contingency allowance to be added back but subject to slower FAS and SESAR delivery and with a moderate increase in service resilience risk. NERL's arguments for contingency to be added back are:

- NERL does not consider it a credible option to run the business without a contingency allowance;
- The CAA's previous regulatory practice allowed operating contingency and the RBP was constructed with this in mind (e.g. stretching savings plans, much of which is unproved or for which no plan to deliver yet exists);
- The removal of operating cost contingency is likely to affect NERL's incentive to find greater efficiencies going forward.
- NERL's operating cost contingency is not a one way allowance. It argues that:
  - the cumulative effect of almost 12 years of cost savings since PPP produces progressively fewer and lower opportunities for additional efficiency savings.
  - experience over CP2 and CP3 has been that the costs unforeseen by the company and the regulator have been at least equal to, or exceeded, operating cost contingency allowances made by the CAA.
- Customer benefits from the allowance of operating cost contingency:
  - allow sustainment of the parallel delivery of key projects when risks crystallise (rather than these risks causing delays or sequential delivery);
  - allow the deployment of additional resources for operational peaks (in order to protect customer service quality in unforeseen circumstances);
  - allow flexibility to respond to changing customer priorities and requirements (e.g. to respond to emerging hotspots).

- NATS set out a possible alternative model for operating costs contingency whereby there would be increased governance around its use and any unused funds would be returned to customers at the end of the regulatory period.[32]

6.67 The Airline Community's initial response strongly supported the proposals not to include an allowance for contingency. The CAA subsequently received a modified statement of the Airline Community position. This argued that while they would not support any unconditional contingency allowance, the benefits of various airspace projects were so great that they wanted sufficient resources to be available to mitigate the risk that they might not be delivered in RP2 - subject to a transparent governance process based on airline agreement. Any contingency allowed would be returned to the airlines with interest if it remained unused. The airlines did not, however, feel they had sufficient information to assess whether additional contingency sums were required.

6.68 The CAA recognises that in projecting costs for a five year period there will be areas of costs where the actual costs will be higher than the level anticipated. However, there are other areas of costs which are likely to be lower than anticipated. In recent periods the latter have tended to outweigh the former even when the provision for contingency has been taken into account. The essence of NATS' arguments is that there is less scope for this to be so in RP2, that cost risks outweigh cost opportunities and that its projections are not realistic without an additional allowance for contingency.

6.69 The CAA needs to take a view as to what represents the best estimate of likely opex whereas the company may take a view based on mitigating the risk that unforeseen circumstances may lead it to underperform. The company may even tend to be more conservative in this respect without doing so consciously.

6.70 The CAA is not convinced by NERL's arguments that it needs to include contingency in its projections to achieve the outcomes set out in the RBP. The CAA finds it unlikely that NERL managers would not have made best estimates of the expected operating costs of delivering key projects and of dealing with operational peaks and of

[32] Correspondence between NATS and the CAA, 2 May 2014.

changing priorities based on their experience for individual work areas. It seems to the CAA that a separate provision for contingency in these areas is more likely to allow a margin to cope with circumstances that are worse than the "mean" circumstances expected. As such it would provide an element of additional comfort rather than form a necessary component to arrive at the best estimate of costs.

6.71 The CAA is however mindful that the Airline Community perceive that the balance of cost efficiency against the risks of specific projects not being delivered (TBS, TA, LAMP, NTCA) is heavily asymmetric. This means they are prepared to put in place a mechanism which would give NERL access to additional monies if the CAA considers it appropriate - as long as this is subject to a transparent process in which Airlines have a say, the amounts are truly additional and in response to unforeseen circumstances and that any unspent allowance with interest would be returned to users. The CAA also recognises that these risks can come from two sources.

- unforeseen delays which rely on parties other than NATS to act in a timely manner in order to achieve specific airspace projects; and
- unforeseen NATS costs necessary to ensure timely delivery of projects and thus benefits.

6.72 To mitigate both these sources of risk the CAA has included as part of this plan a FAS Deployment Facilitation Fund as set out in paragraphs 6.86-6.89 below. This therefore includes the equivalent of part of the contingency being sought by NERL.

6.73 The CAA confirms, as a matter of general regulatory best practice that it does not favour allowances for contingencies in opex in general as this is likely to facilitate costings being padded over and above the best estimate.

6.74 The CAA acknowledges the risk that this change in policy may cause NERL to be more cautious in its bottom up forecasts at future reviews. This may require still greater scrutiny from the CAA's external consultants at that time. Nevertheless the CAA sees its approach for RP2 as a short term arrangement to address the concerns of users. It does not anticipate that making an additional allowance for opex contingency will be a feature of future reviews.

Capex

6.75 The CAA has adopted the projections for capex set out in the RBP of £544 million over RP2 (in 2012 prices[33]). This breaks down into the major programmes as shown in Figure 6.8 below.

6.76 This projected capital investment plan takes account of the views of users during customer consultation that the benefits of LAMP and NTCA airspace changes should be delivered in RP2. An alternative approach that would have slowed down these projects had been presented to users. However, users had favoured the realisation of major fuel saving benefits by the end of RP2 rather than the slowdown or deferral of this element of cost.

6.77 The CAA notes the arguments in the users' specific interests paper that they would like to see the capex programme reduced by some 10%. The CAA, however, considers that based on its consultants' findings that there is reasonable evidence to support a view that the RP2 Plan can be expected to offer value for money for airline users. Moreover, the CAA considers that there are significant benefits to users of the timely delivery of the capex plan in terms of fuel savings and the longer term benefits of technology change. The CAA is not persuaded that there are any merits in squeezing the programme particularly as the effects of small adjustments to the assumptions on capex would have only a very small effect on charges (and any shortfall in actual compared to projected spend would be reflected fully in future charges).

[33] The RBP also sets out a figure of £575 million in 2012 prices which includes Oceanic and non regulatory asset base investment.

Figure 6.8: Summary of UKATS capex programme (2012 Prices)

Name of investment	Total CAPEX for the project	Planned Amount of Capital Expenditure (in national currency)					Total capex for RP2
		2015	2016	2017	2018	2019	
Airspace Development	53.3	8.1	8.3	6.8	6.1	7.5	36.9
LAMP	60.5	5.4	6.4	6.7	4.5	0.9	23.9
Centre Systems Software Development	191.4	50.8	45.6	30.4	27.3	25.1	179.2
CNS Infrastructure	119.7	17.7	18.0	22.4	21.0	13.5	92.7
CO2 and Fuel Saving	5.0	1.8	1.0	1.0	1.0	1.0	5.8
iTEC FDP/NCW	204.8	31.5	34.5	29.8	27.6	27.8	151.2
Sub-total of main capex above (1)	634.7	115.3	113.8	97.2	87.5	75.9	489.6
Sub-total other Capex (2)	67.4	12.9	10.5	9.5	9.4	12.4	54.7
Total capex (1)+(2)	702.1	128.2	124.3	106.7	96.9	88.2	544.3

Source: NERL

The Regulatory Asset Base and Depreciation

6.78 The explanation of these components of cost is set out in detail in the additional information accompanying the PP[34].

6.79 In the draft Performance Plan the CAA proposed the RAB and depreciation projections in Figure 6.9.

Figure 6.9: Draft PP: Expected Average Regulatory assets and depreciation (£2012)

	2015	2016	2017	2018	2019
Average RAB	1076.6	992.2	908.6	842.9	780.3
Depreciation*	179.5	179.4	173.0	160.1	153.1

*As corrected by NERL. Source: NERL and CAA calculations.

[34] En Route Charging Zone Additional Information - Annex C.2.2 to the Performance Plan in EU template.

6.80 In the context of revising the financial modelling post the Draft Performance Plan, NATS has also sought to refresh the RPI forecasts based on Oxford Economics forecast's published in April 2014. The adjustments that they were seeking to apply would increase the wedge between the RPI and HICP index which would further increase the cost allowances in the areas dependent on the movement in the RPI rather than HICP. (Depreciation and cost of capital are based on the Regulatory asset Base (RAB) which is revalued by RPI.)

6.81 The CAA is not convinced that there is a strong case for increasing the wedge between the HICP and the RPI. Firstly, it is an issue which other stakeholders have not had an opportunity to comment on as part of the consultation and secondly the wedge in the draft plan was already relatively high compared to consensus forecasts. The CAA has decided to derive the RPI forecasts by applying the same difference between RPI and HICP for the six years 2016 - 2019 that applied in the draft plan.

Figure 6.10: Final PP: Expected Average Regulatory assets and depreciation (£2012)

	2015	2016	2017	2018	2019
Average RAB	1,059.8	981.2	906.3	842.3	780.0
Depreciation	179.0	178.8	172.4	159.9	153.2

Source: NERL and CAA calculations

Cost of Capital

6.82 The RBP adopted a working assumption for the headline cost of capital of 7% (pre-tax real). This was based on advice NERL commissioned from Oxera[35] . In the calculation of allowed returns, NERL used the accounting rate of return (ARR) of 6.76%[36]. The CAA commissioned PricewaterhouseCoopers (PwC) to advise on the

35 http://www.caa.co.uk/default.aspx?catid=5&pagetype=90&pageid=585

36 The accounting rate of return (ARR) is a concept that recognises that within a year returns can be reinvested, and therefore to earn the WACC by the end of the year, a lower cost of capital, the ARR, should be applied to the RAB. The ARR was used in previous control periods and is used in other, but not all, regulated sectors.

appropriate cost of capital for NERL for RP2[37].

6.83 Based on the expert findings as well as CAA's own analysis and consideration of stakeholder responses, discussed in detail in Appendix C, the CAA's point estimate for NERL's pre-tax weighted average cost of capital (WACC) for RP2 is 5.86% as shown in Figure 6.11 below.

Figure 6.11: Proposed cost of capital for RP2

Percent	RP2 Proposals
Gearing	60
Pre-tax cost of debt	2.50
Total Market returns	6.25
Risk-free rate	0.75
Equity risk premium	5.50
Equity beta (number)	1.11
Post-tax cost of equity	6.87
Tax uplift	37
Pre-tax cost of equity	10.90
Vanilla WACC38	4.25
Pre-tax WACC	5.86
The rate applied to the RAB	Pre-tax WACC: 5.86%

Source: CAA analysis and PwC report

6.84 The reduction in the pre-tax WACC compared to RP1 pre-tax WACC of 7% is the result of:

- a reduction in the cost of debt, which is the result of a reduction in market rates and the higher credit rating assumption;
- a reduction in the cost of equity, which is a result of a reduction in the beta and a reduction in the total market returns assumption; partially offset by
- an increase in the effective tax rate; and

37 See Appendix A for further details on consultancy studies.

38 The vanilla WACC is the weighted average of the pre-tax cost of debt and the post-tax cost of equity.

- a comparison to other sectors.

Allowed returns

6.85 The allowed returns are calculated by applying the cost of capital to the RAB. NERL's RBP included allowed returns over RP2 of £311.7 million. The CAA's draft PP for RP2 included allowed returns of £264.5 million. In the final PP these have increased to £267.9 million.

Figure 6.12: Allowed returns (£2012)

	2015	2016	2017	2018	2019	Total
RBP	72.9	67.2	61.6	57.1	52.9	311.7
Draft PP*	61.4	56.5	51.8	48.0	44.4	262.2
Final PP	61.6	56.9	52.6	48.9	45.3	265.3

*As corrected by NERL. Source: NERL and CAA analysis

Summary of adjustments

Figure 6.13: Summary of Adjustments between Draft and Final Performance Plans

£ Million (2012 prices)	2015	2016	2017	2018	2019	Total
Draft Performance Plan	**548.6**	**537.4**	**527.7**	**509.1**	**489.6**	**2612.4**
Corrections post draft performance plan NATS April 14	0.1	-0.2	-0.3	-0.4	-0.4	-1.2
Changes due to traffic forecast update	-0.7	-0.4	-0.1	0.0	0.0	-1.3
Changes due to inflation forecast	0.4	0.0	0.0	0.5	0.9	1.7
MoD adjustment	0.3	0.5	0.5	0.5	0.6	2.5
Cost of capital change	1.2	1.1	1.0	0.9	0.9	5.1
Employee share scheme adjustment	0.9	1.2	1.2	1.1	1.2	5.5
Final Performance Plan*	**550.8**	**539.5**	**530.0**	**511.8**	**492.7**	**2624.8**
Difference from Draft Plan	2.3	2.1	2.3	2.7	3.1	12.4

*This does not include the FAS Deployment Facilitation Fund or military service units adjustment.

Source: NERL & CAA calculations

FAS Deployment Facilitation Fund

6.86 The CAA is including provision for a small FAS Deployment Facilitation Fund as part of the RP2 Performance Plan to mitigate some of the risks to the delivery of the FAS programme. This recognises the very significant benefit to users of elements of FAS, and the potential for relatively slow provision of work by third parties to cause delay. The detailed workings and governance of the fund are yet to be defined, but the broad outline under consideration is as follows.

6.87 The fund would contain two components:

- A small fund of £1.5 million p.a. in nominal prices (or £7.5 million over the course of RP2), additional to the UK unit rate, to support the financing of minor but important projects to facilitate FAS implementation. The focus would be on projects which are essential for the timely delivery of FAS but where the costs and benefits of change fall on different stakeholders, and hence there is not a sufficiently strong business case from the point of view of the relevant stakeholder to take it forward in a timely manner;
  - The money would not be intended for disbursement to NATS projects, but should provide a mechanism to relieve external blockages;
  - NATS would contract for the projects to be delivered, so creating appropriate accountability;
- A fund of £3.0 million p.a. in nominal prices (in lieu of a NERL contingency allowance):
  - This money would be available for disbursement in respect of additional spending[39] on specific projects (TBS, TA, LAMP, NTCA) where it can be demonstrated by NERL that:
    - The additional spending is a necessary requirement to deliver the substantive benefits on time;
    - NERL has provided a sufficient level of information to demonstrate the above.

39 Other than capex.

6.88 For both elements of the fund:

- it would be financed through an addition to NERL Determined Costs as set out in this plan;
- the fund would be allocated to projects by the FAS Deployment Steering Group (FAS DSG), subject to specific criteria. The FAS DSG includes representatives from the airlines, airports, Government and the CAA. It is co-chaired by the CAA's Group Director SARG and the NATS' Managing Director Operations. The group is currently tasked with managing the dependencies across FAS initiatives and alignment with SESAR Common Projects. In making decisions to allocate funds for NATS' or external stakeholders' projects, the FAS DSG would give due consideration to the views of users and other relevant stakeholders;
- the process envisaged (but subject to para 6.89 below) could involve NERL applying for funding to the FAS DSG, in respect either of NERL's projects or external projects where NERL will itself have been approached for funding by the external stakeholder. NERL's application would provide justification either for the additional spend required for NATS specific projects, or, where external stakeholders are involved, the need to unlock the wider deployment by NATS of FAS projects, or realisation of the full benefits associated with such projects;
- the FAS DSG would consider disbursements over RP2 as a whole and would not be constrained by the sums recovered through the determined Costs in any one particular year;
- Unspent funds would be returned to users in RP3.

6.89 Following adoption of this Plan, the CAA will engage with the FAS DSG (the Airline Community, airports and NATS) to determine and agree the assessment criteria for allocation of funds to specific projects and associated practical arrangements. The allocation of funds to FAS deployment projects will be tracked and reviewed in conjunction with the FAS reporting process envisaged for the NERL Licence.

Traffic

6.90 The draft Performance Plan was based on the STATFOR forecasts published in September 2013 although the plan did envisage that the

final Performance Plan would be revised based on the STATFOR forecasts published in February 2014. These have now duly been revised.

6.91 The projections of DUC in Figure 6.20, including the starting base for 2014, have been recalculated to reflect these changes.

Inflation

6.92 The draft Performance Plan was based on IMF inflation forecasts from October 2013 but it was stated that the final plan would be amended to reflect IMF revised forecasts extant before 30 April 2014. The figures have been duly revised to reflect IMF forecast for CPI published in April 2014 and resultant revisions to the forecasts for RPI.

6.93 As set out in paragraph 6.81 above the CAA has decided not to implement the revisions to the RPI forecasts produced for RPI by Oxford Economics.

Profiling

6.94 NERL's RBP presented an additional profile of DUC, consistent with earlier advice from the CAA, that had been smoothed so that:

- the percentage rate of reduction was equal in each year; and
- the present value of costs when discounted at the cost of capital (then assumed by NERL) was the same as it was for the unprofiled DUC.

6.95 The effects of this are illustrated in Figure 6.14.

Figure 6.14: The effects of profiling DUC: Final Performance Plan[40]

£ 2012 prices	2014[41]	2015	2016	2017	2018	2019	CAGR %
Un-profiled DUC	£59.72	£54.46	£52.35	£50.70	£48.15	£45.58	-5.3%

[40] Excludes FAS Deployment Facilitation Fund and military service units adjustment. Un-profiled DUC figures therefore differ from those in Figure 6.20.

[41] The 2014 base DUC has been calculated consistent with the basis for the RP2 EU wide targets.

Profiled DUC	£59.72	£56.29	£53.06	£50.01	£47.14	£44.43	-5.7%

Source: CAA

6.96 Because a large part of the efficiency improvements projected by NERL significantly reduce determined costs from the start of RP2, it would understate the efficiency of the plan if the compound average growth rate (CAGR) calculation was measured between 2014 and 2019 ignoring the profile between those two years. For that reason, the profiled DUC provides a better reflection of the true efficiency of the plan.

6.97 The annual rate of change in the profiled DC and DUC provides a useful indicator of the equivalent value of cost savings to users of the un-profiled returns after taking the bringing forward of savings into account. The CAA would request that the PRB and European Commission take this into account in considering the contribution of the NERL plan.

NERL Component

6.98 The projections above have been based on deriving a DUC based on net costs and service units for civilian flights. The DC has been adjusted as set out in paragraph to take account of military service units as set out in Figure 6.15.

Figure 6.15: Adjustment to account for military service units[42]

£2012 Prices	2015	2016	2017	2018	2019
NERL Determined Costs (excl. military) £millions	£550.8	£539.5	£530.0	£511.8	£492.7
Service units (excl. military)	10,114	10,305	10,453	10,628	10,810
DUC	£54.46	£52.35	£50.70	£48.15	£45.58
Service Units (incl. military)	10,244	10,435	10,583	10,758	10,940

[42] Excludes FAS Deployment Facilitation Fund. Figures therefore differ from those in Figures 6.19 and 6.20.

DC (incl. military) £millions	£557.9	£546.3	£536.6	£518.0	£498.7

Source: CAA/NERL

6.99 The final nominal DC includes a further £22.5 million in nominal terms to cover the FAS deployment fund.

MET

6.100 The CAA (in its role as the UK Met Authority) concluded a review of MET arrangements during RP1, which has informed the costs that have been included by the Met Office during RP2. The arrangements for MET comprise a number of elements including: Core, Direct, R&D and Volcanic Ash.

6.101 Core costs are the en route share of the underpinning infrastructure costs of providing a weather forecasting service (e.g. supercomputer, numerical weather prediction model etc.) and are calculated in accordance with the guidelines contained within ICAO Document 9161, Manual of Air Navigation Service Economics. In the UK, Core costs are divided between civil aviation, UK Government Departments, the Maritime and Coastguard Agency (MCA) and a contribution from the sale of numerical weather prediction data and other products to third parties, including commercial weather service providers. Core is established to provide the weather forecast capability required before any specific products and services can be provided to any customer. This includes an appropriate surface and upper air observing network (as specified by the World Meteorological Organisation) and a significant contribution to European weather satellite programmes (operated by European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT)). Just over 20% of Core costs are allocated to civil aviation.

6.102 Direct costs are those costs associated with providing the specific products and services required as part of the UK's obligations under ICAO Annex 3. This includes human resources (e.g. aeronautical meteorologists) and IT production systems (e.g. post processing systems that can turn numerical weather prediction data into specific aeronautical information). As part of an ongoing efficiency drive to reduce costs, a number of changes to the provision of direct services are envisaged during the course of RP2, in particular further

automation of the forecast production process that allows the meteorologist maximum opportunity to use their skills and experience to add value to the output.

6.103 There is expected to be a small element of research and development undertaken annually (~£150K per annum) in support of the direct MET services. Examples of such projects undertaken include development of fully calibrated probabilistic aviation hazard forecasts, research into global probabilistic ensemble convective diagnosis procedure forecasts and the evaluation of fog in a very high resolution model. This assists in the delivery of improved efficiencies, whilst improving safety and accuracy of the forecasts provided, from that provided under the global World Area Forecast System (WAFS) to short-period aerodrome specific information.

6.104 There remains a significant amount of ongoing work relating to volcanic ash. At the forefront of this is the ongoing provision of the Civil Contingencies Aircraft for the detection and measurement of volcanic ash and gases. Additionally, following a grant from the DfT for the initial purchase, there is the ongoing provision of a Lidar network to detect and indirectly measure volcanic ash from a number of ground-based instruments strategically located around the UK. Ongoing development work continues at the Volcanic Ash Advisory Centre, under the auspices of ICAO, to support operators in the event of a future Iceland volcanic eruption.

6.105 The MET costs also include the cost of the provision of the UK's contribution to the ICAO WAFS. Under WAFS, there are two meteorological forecast centres providing global weather forecasts, for flight planning purposes. The forecasts are in the form of gridded datasets for ingestion into flight planning systems covering wind, temperature, humidity, maximum wind, tropopause height, as well as icing, turbulence and cumulonimbus clouds. Additionally, forecaster-derived significant weather forecasts are provided for the globe above 24,000 feet and specific regional areas above 10,000 feet (e.g. Europe). The two WAFCs, provided by the Met Office and US National Weather Service, remove a significant amount of duplication of effort worldwide that would otherwise occur.

Department for Transport (DfT)

6.106 The DfT element of the en route cost represents the UK's share of the

EUROCONTROL Agency cost-base and is not subject to traffic risk sharing. The Performance Scheme classifies costs subject to international agreements, such as membership of EUROCONTROL, as also exempt from the cost-sharing mechanism (i.e. costs are passed through). Further explanation of this is provided below.

6.107 Member States are responsible for setting the Agency's budget and monitoring actual expenditure. The UK has always been a pro-active and influential member of the Finance Committee and has been instrumental in developing measures to reduce the Agency's costs in real terms during the past decade.

6.108 It is therefore clear that the overall Agency budget is influenced and controlled by Member States. However, the sharing keys that are used to calculate the percentage of the total Agency cost-base to be funded by individual States, and the exchange rate of the euro against local currency, are not under the control of Member States. Differences between the Determined and actual costs caused by adjustments to the sharing keys and exchange rate fluctuations are treated as uncontrollable, and are dealt with through an adjustment in the following reference period.

6.109 The DfT recorded a surplus of £3.7m in 2012, due to exchange rate fluctuations. This surplus, together with any over or under recovery recorded in 2013 and 2014, will be carried forward and included as an adjustment in RP2.

6.110 The estimates in Figure 6.16 assume the €/£ exchange rate remains constant at 2014 levels.

Figure 6.16: DfT Determined Costs and Determined Unit Cost in Nominal Terms for RP2[43]

	2014	2015	2016	2017	2018	2019
Eurocontrol Cost Base (€000)	507,506	499,861	522,712	541,906	559,604	577,682
UK share	11.18%	11.18%	11.18%	11.18%	11.18%	11.18%
UK cost-base in €	56,738	55,883	58,438	60,584	62,563	64,584
Exchange rate	0.82443	0.82443	0.82443	0.82443	0.82443	0.82443

43 Based on the CRCO Tables PC Decision 3 June 2014.

UK cost-base in £	46,777	46,072	48,178	49,947	51,579	53,245
TSU	9,817	10,244.00	10,434.60	10,583.20	10,758.00	10,940.40
Determined Unit Rate	£4.76	£4.50	£4.62	£4.72	£4.79	£4.87

Source: CAA

6.111 The forecast evolution of the EUROCONTROL budget during RP2 will lead to a DUC of £4.50 in 2015, with a small increase to £4.87 by the end of RP2.

CAA (NSA)

6.112 Of the four KPAs the UK NSA is directly accountable only for contributing to cost-efficiency.

6.113 The DUC for en route air navigation services includes the costs attributable to the NSA for staff costs, other operating costs and capital costs associated with the regulation of ANS. Although the NSA DC comprises a much smaller proportion of the total DC than NERL, customers rightly expect the cost-efficiency with which ANS regulation is undertaken to be subject to the same level of scrutiny from a performance management perspective.

6.114 Figure 6.17 sets out the forecast costs for the NSA in nominal terms for RP2.

Figure 6.17: NSA Determined Costs and Determined Unit Rate in Nominal Terms for RP2

	2014	2015	2016	2017	2018	2019
Staff (£000)	4,625	3,685	3,847	4,015	4,188	4,367
Other operating costs (£000)	2,225	1,915	1,963	2,012	2,062	2,113
Depreciation (£000)	1,328	1,319	1,319	1,320	1,320	710
Cost of capital (£000)	304	243	183	123	62	16
Exceptional items (£000)	6,000	6,000	6,000	6,000	6,000	6,000
Total costs (£000)	14,482	13,162	13,312	13,470	13,632	13,206
Service Units (000)	11,034	10,244	10,435	10,583	10,758	10,940
Determined unit costs	£1.31	£1.28	£1.28	£1.27	£1.27	£1.21

Source: CAA

6.115 The NSA costs separately charged to the UK en route unit rate comprise a number of elements of the CAA's costs, predominantly the costs of the airspace regulation activities of the Safety and Airspace Regulation Group (SARG). The SARG was created in 2013 following the merger of the CAA's Safety Regulation Group (SRG) and Directorate of Airspace Policy (DAP). The cost savings and synergies resulting from the merger of the two Groups have resulted in a significant reduction in the staff costs attributable to the regulation and oversight of en route ATM.

6.116 SARG's duties include the planning and regulation of all UK airspace including the navigation and communications infrastructure. The costs of the CAA's safety and economic regulation of en route ANS are charged directly to the ANSPs and form part of their cost base.

6.117 Actual costs in 2013 were £13.1m, some £1.1m below the DCs, as a result of the SARG restructuring and a range of other cost-containment measures across the whole of the CAA.

6.118 In 2014, the final year of RP1, the CAA's Determined Costs were £14.5 million. These costs were based on the previous CAA structure, before the merger of SRG and DAP. Due to the reduction in the number of posts allocated predominantly to airspace regulation, and the other cost-containment measures introduced in 2013, it is likely that actual costs will be significantly lower than the DCs in 2014.

6.119 The main component of the CAA's en route cost base in RP2 is the airspace regulation activities of the SARG (£5.3 million in 2015). SARG's airspace regulatory activities are staffed by both civilian and military experts in order to ensure a joint and integrated civil and military air traffic service.

6.120 £1.9 million are Supervision Costs in 2015 of which £1.6 million relates to the depreciation and costs of capital associated with the major refurbishment project in the former NATS Headquarters building in 2005. The building is fully sub-let by the CAA, with all day-to-day costs recovered from tenants. The capitalised refurbishment project will be fully depreciated by the end of 2019.

6.121 The remaining £0.3 million comprises the costs of legal and financial support to the route charges system including the cost of funding the UK's enforcement activities associated with the collection of unpaid route charges on behalf of the Central Route Charges Office (CRCO).

6.122 In RP1, the CAA recovered an amount of £6m per annum in respect of contributions to its defined benefit pension scheme to meet the Pensions Benefit Obligation (PBO) of NATS pensioners and deferred pensioners prior to 2001 when NATS was separated from the CAA.

6.123 The CAA Pension Fund (CAAPS) carried a provision to meet future increases in longevity for the NATS pensioners described above. However, increases in life expectancy have now depleted that provision. Successive actuarial valuations of the CAA Scheme, carried out every three years, have shown increases in these liabilities, which have eaten into the longevity provision. In addition, the assets backing the PBO are gilts, but market movements have not kept pace with liability changes. Overall this means that further funding is needed in order to meet the PBO of NATS pensioners and deferred pensioners. The additional cost identified from the (2013) actuarial valuation is estimated at approximately £50 million. The CAA will therefore continue to recover £6m per annum throughout RP2 to meet the liabilities described above.

6.124 As the increased costs relate specifically to NATS pensioners and deferred pensions, it is inappropriate for the CAA to recover the additional costs through its regulatory charges schemes (which cover its safety, economic and consumer protection activities and affect only UK industry). If the decision had been taken at separation to leave

these liabilities with NATS, the costs would have been recovered through the NATS component of the UK's en route charge.

6.125 For the remainder of RP2, the CAA's core regulatory costs are forecast to increase in line with, or slightly below the rate of inflation until 2018. During 2019, the depreciation charges and cost of capital related to the One Kemble Street refurbishment project will end, leading to a 3.1% reduction in total costs.

6.126 Based on the February STATFOR traffic forecasts, the CAA's DUC in nominal terms is expected to be £1.28 in 2015, reducing to £1.27 by 2017, with a further reduction to £1.21 in 2019.

Costs Carried Forward from RP1

6.127 In calculating the unit rate for each year, the Charging Regulation requires other factors to be added to the DUC, largely relating to corrections for traffic risk sharing inflation and penalties or bonuses in two years before. Significant sums are anticipated for 2015 and 2016 based on under recoveries in 2013 and 2014. The final sums to be recovered will depend on outturns but the sums in Figure 6.18 are currently anticipated.

Figure 6.18: Current expected sums carried forward to 2015

£ millions Nominal	2015	2016
NERL	53,547	60,844
MET	3,501	0
CAA & DfT	7,704	-5,662
Total	64,753	55,182
Per Service Unit (£)	6.32	5.29

Source: NERL and CAA

*Includes only expected variance in Eurocontrol element.

6.128 The values relating to 2016 are as yet unknown but partial estimates have been made here.

6.129 For 2017 and beyond the expected amount to be carried forward in respect of traffic risk-sharing, inflation and penalty/bonuses is zero. In the event, actual carry forwards will depend on variances against forecasts and are as likely to lead to reductions as increases in charges. (There is expected to be a relatively small amount of about

£1.2 million p.a. relating to cash pension variance in RP1.)

UK cost efficiency target

6.130 The following Figures summarise the UK cost efficiency target:

Figure 6.19: Determined costs (DC):

2012 prices £millions	2014 Base[44]	2015	2016	2017	2018	2019	CAGR 2014 to 2019
NERL	598.7	562.3	550.6	540.9	522.2	502.8	-3.4%
MET	30.6	26.4	25.7	25.0	24.4	23.7	-5.0%
NSA& DFT	51.3	55.6	56.7	57.3	57.8	57.7	2.4%
UK	680.6	644.3	633.0	623.2	604.3	584.3	-3.0%

Source: CAA calculations

6.131 This is consistent with the DUC in Figure 6.20.

Figure 6.20: Determined unit cost (DUC):

2012 prices £millions	2014 Base[45]	2015	2016	2017	2018	2019	CAGR 2014 to 2019
NERL*	59.72	54.89	52.77	51.11	48.54	45.96	-5.1%
MET	3.05	2.57	2.46	2.36	2.26	2.17	-6.6%
NSA& DFT	5.12	5.43	5.43	5.41	5.37	5.27	0.6%
UK	67.89	62.89	60.66	58.88	56.18	53.41	-4.7%

*This includes the FAS Deployment Facilitation Fund and the military service units adjustment.

Source: CAA calculations

Figure 6.21: Summary

	2015	2016	2017	2018	2019

[44] The 2014 base case has been calculated consistent with the approach taken for the EU wide target as follows: (1) The DUC for 2011 from the RP1 plan has been reduced by -3.5%p.a. to get a notional estimate of what the targets would have been in 2014 had the EU-wide target for RP1 been applied to the UK. This has been grossed up by the total service units estimated in the RP1 UK national performance plan.

[45] The 2014 base DUC is the 2014 base DC divided by the estimate of actual TSU for 2014 in the September 2013 STATFOR medium term forecasts.

DC nominal (£000)	£686,096.0	£686,856.9	£689,731.6	£682,288.3	£672,799.2
Inflation index	106.5	108.5	110.7	112.9	115.2
DC real (£000)	£644,287.4	£632,975.4	£623,161.4	£604,349.5	£584,259.2
Total Service Units (000)	10,244	10,435	10,583	10,758	10,940
DUC real (£)	£62.89	£60.66	£58.88	£56.18	£53.41

Source: CAA calculations

6.132 The UK cost efficiency targets as set out above represent an annual rate of reduction in the real DC of 3.0% and the real DUC of 4.7%. The proposed UK target for en route cost efficiency is more challenging than the EU wide target of 3.3% DUC reduction pa. However, the traffic forecast used to adopt EU targets was the STATFOR low case, as oppose to the higher STATFOR base case used by the UK and considered more appropriate and reflective of expected traffic during RP2. In terms of further efficiencies identified by the CAA in the NERL element, the CAA remains of the view that its duties under the Transport Act 2000 suggest that it should go beyond the EU target to pursue the best financeable outcome for users.

CHAPTER 7

En Route Cost Efficiency Ireland

Irish Target

7.1 Figure 7.1 summarises the Irish en route cost efficiency target.

Figure 7.1: Summary of the Irish en route cost efficiency target

	2015	2016	2017	2018	2019
DC nominal (£000)	€118,729.4	€122,039.4	€126,193.5	€129,913.4	€131,301.7
Inflation index	102.22	103.44	104.89	106.67	108.49
DC real (£000)	€116,163.4	€117,997.9	€120,356.4	€121,803.6	€121,038.5
Total Service Units (000)	3,982.6	4,049.6	4.113.3	4,184.9	4.262.1
Real DUCs	€29.17	€29.14	€29.26	€29.11	€28.40

Introduction

7.2 The definition of the target for cost efficiency for en route services was provided at the start of the previous section, i.e. it is the ratio between en route DC and forecast traffic. The forecast traffic is presented in Chapter 2 of this document. For Ireland, the DC is made up of the contributions of the following entities:

- IAA (ANSP);
- IAA (NSA); and
- Met Éireann.

IAA (ANSP)

7.3 The IAA is a safe, highly cost-efficient and reliable ANSP. The Irish unit rate is among the lowest in Europe, and has not exceeded €33.01 over the past 15 years. The ANSP plans to continue providing a cost-efficient service throughout RP2. All investments are aimed to fulfil an obligation due to obsolescence, customer requirements, regulatory and legislative requirements and/or compliance with SESAR/ATM

Master Plan. The IAA does not conduct research & development and wherever possible, procures commercially available, off the shelf products and services. Customisation is kept to the minimum necessary to allow the ANSP to provide a safe, cost efficient and expeditious service to the airline customers.

7.4 At the same time, the critical role that the IAA plays in controlling air traffic between Europe and North America needs to be recognised. On any given day, circa 90% of all air traffic on the North Atlantic transits through Irish airspace. This means that also on an international level it is important for the IAA to be able to maintain its levels of service - a drop in service levels would present a significant risk to punctual, cost effective and environmentally friendly aircraft operations between Europe and North America.

7.5 With the above in mind, the Business Plan that was agreed between the ANSP and the NSA proposes a cost base for RP2 which remains relatively stable at its current low levels.

Staff costs

Staff numbers

7.6 Overall, a minor reduction in staff numbers is expected over the RP2 period. This reduction will be fully covered by a reduction in operational staff, with controller numbers reducing from 293 in 2015 to 288 in 2017, and the number of radio officers reducing from 52 in 2015 to 50 in 2017. From 2017 onwards, staff numbers will remain constant.

7.7 The early years of RP1 saw an unprecedented high level of retirements from the IAA ANSP. In the 5 years prior to 2012, the average age at which an ATCO retired was 62 years. As a result of a high level of uncertainty around proposed changes to the taxation regime in the area of pensions in Ireland, the average retirement age across 2012 and 2013 was 60 years. Current low volumes of en route traffic have allowed the IAA to continue to provide a high quality ATM service despite this accelerated rate of retirement, but with forecast traffic growth there is now only a marginal opportunity for further efficiencies in controller numbers.

Pensions

7.8 Provision for pension costs has been made on the basis of the latest

triennial actuarial valuation (1 January 2012) and an internal agreement put in place in November 2010. This agreement was implemented to address a very serious deficit in the IAA Pension Fund. This was of such a magnitude as to potentially impact on the ongoing sustainability of the organisation.

7.9 The agreement will, over time but beyond RP2, significantly reduce the cost of providing pensions to staff. The terms of the agreement are as follows:

- corrective measures to address the shortfall in the pension fund to be met on a 50/50 basis with the employer and staff;
- the defined benefit pension scheme was closed to new members from 1 January 2012;
- member contributions to the pension scheme were increased to 6% per annum;
- the IAA would continue its annual contribution of 30.5% of pensionable pay;
- an additional annual contribution of €5.4 million to be contributed by the IAA;
- a freeze on pensionable pay increases until July 2015;
- pensionable increases limited to CPI, or 3%, whichever is the lesser, for the period 1 July 2015 to 31 December 2018;
- arrears of pay, awarded to staff in respect of 2008 to 2010 to be paid into the pension fund with the IAA matching this amount on a once-off basis; and
- a new hybrid pension scheme was established for staff who joined the IAA from 1 January 2012, providing an element of defined benefit provision up to a salary cap with employees earning above the cap having the option to contribute to a defined contribution scheme.

7.10 The totality of measures implemented to address the pension deficit issue is delivering real benefits in terms of returning the fund to solvency, and mitigating a threat to the sustainability of the organisation. There is a degree of interdependency to these measures, and any one item (e.g. hybrid scheme) cannot be

considered in isolation.

Total en route staff costs

7.11 The ANSP has implemented a pay freeze since 2011, and this is not considered a sustainable approach for the RP2 period. An average annual pay rise of 3.2% is foreseen for the RP2 period. This average pay rise includes a provision for promotions. In combination with the foreseen decrease in staff numbers, this leads to an average increase in payroll costs of approximately 3.0%. Both the pay rise and the overall increase in payroll costs are expressed in nominal terms. If inflation was taken out and the figures were expressed in real terms, the average annual pay rise would be 1.8%, and the overall increase in payroll costs 1.5%.

7.12 Whereas this increase is accepted for RP2 in response to the pay freeze that has been in place in recent years, measures are in place to ensure payroll costs are controlled in the latter part of RP2 and into RP3. These measures include:

- Suppression and consolidation of a number of senior management posts
- Enhanced Staff Performance Management
- Extensive salary review leading to reduced salary scales for future post holders in the ANSP

7.13 Payroll costs allocated to en route staffing are set at 64% of overall staff costs. This is based on the actual division of duties within the operational areas, and an allocation of relevant support costs.

7.14 The factors discussed above (staff numbers, pensions and pay rises) together lead to an increase in en route staff costs over RP2 at an annual average of 3.3% in nominal terms.

7.15 The ACE Benchmarking report shows the IAA ANSP costs to be significantly below the European average in ATCO employment costs per composite flight-hour and above the European average in ATCO-hour productivity (gate-to-gate).

Other operating costs

7.16 Other operating costs cover, among other items, travel, training, utilities, telecommunications, subscriptions and administration.

Overall, other operating costs will decrease over RP2 by an average of 1.0% in nominal terms.

7.17 Changes to most costs are expected to be in line with inflation, with some exceptions. The following is an overview of the main changes of individual cost items that will contribute to the overall reduction in other operating costs – it is worth noting that further, smaller changes are also expected in other cost items and other years during RP2, but only changes that have a notable impact on overall determined costs are discussed here:

- Decrease of nearly 10% in administration costs in 2016 - administration costs are the biggest single cost item in the other operating costs, and the decrease in these costs that is foreseen for 2016 therefore has a notable impact on the overall other operating costs. The decrease in expenditure in administration costs is not the result of significant single cut in any particular area; it is the consolidated effect of multiple cost reductions, and includes cost reductions in expenditures such as legal & professional, security, cleaning, facility management, building repair and maintenance, computer maintenance, external agency costs and policy costs. Administration costs in this capacity do not relate to administration staff headcount & payroll – this is covered under IAA (ANSP) staff costs, above.
- Decrease of over 5% in training costs in 2017 - training costs are the third largest item in other operating costs. The main contributing factor for the reduction in training expenditure from 2017 onwards is the retirement profile of the operational workforce. Expectations are that retirements will fall in 2017 but will remain high in the period up to then. This will necessitate a focus on training in 2015 and 2016, but with an associated reduction in training costs in the later part of RP2.
- Decrease of over 5% in other costs in 2019 - other costs include maintenance contracts, flight checking and calibration, spares for CNS equipment, power and vehicle maintenance. This cost item is the fourth largest item in other operating costs. The foreseen cost reduction will be achieved towards the end of RP2 as a result of cost effective synergies in areas such as maintenance contracts and the provision of spares.

7.18 The three areas discussed here, administration, training and other costs, together make up nearly 75% of other operating costs.

Capex and depreciation

7.19 As mentioned in the introduction to this section: the IAA "do not participate in “nice to have” projects. All investments are aimed to fulfil an obligation due to obsolescence, customer requirements, regulatory and legislative requirements and/or compliance with SESAR/ATM Master Plan. The IAA does not conduct research & development and wherever possible, procures commercially available, off the shelf products and services. Customisation is kept to the minimum necessary to allow the ANSP to provide a safe, cost efficient and expeditious service to the airline customers."

7.20 For the RP2 period, a total of €106.7 million of capital expenditure is foreseen, distributed over five areas, as follows:

Figure 7.2: IAA ANSP RP2 Capex

Area	Capex
Flight Data Processing	€40.5M
Communications	€18.9M
Surveillance & Navigation	€27.7M
Information Technology / Other	€6.6M
En route contingency centre	€13.0M

Source: IAA SRD

Flight Data Processing

7.21 COOPANS (Cooperation for Procurement of ANSP Systems) was established in 2006. The objective was to establish a single FDP system that would be deployed by the COOPANS partners (currently IAA, LFV, NAVIAIR, CCL and Austro Control). Build 1 was deployed into operation in 2011.

7.22 The overarching aim of the COOPANS cooperation is to achieve financial savings and reduced investment risks for every ANSP by harmonising, standardising and consolidating the activities of the participating ANSPs. The development costs to date are shared between the partners. The cooperation reduces system development costs by approximately 30% when compared with the costs each partner would incur if it had to develop the technology independently.

This figure has been determined by Helios, an independent consulting company that specialises in ATC services.

7.23 COOPANS will continue into RP2. One example of COOPANS development is an upgrade which will allow the automated reporting of incidents. This will be introduced in Build 3 and will be available by the end of 2016. It will facilitate achievement of the safety targets set under the RP2 performance scheme.

Communications

7.24 The majority of capital investment in the communications area is associated with one major upgrade project, the replacement of the current Voice Communication System (VCS), which will run until 2016. The upgrade involves the installation of new systems at IAA ATC facilities.

Surveillance & Navigation

7.25 All scheduled radar replacements as part of the surveillance replacement program are complete, with the exception of Dublin Radar 2. Rather than replace this radar head, use of ADS-B/WAM as an alternative surveillance technology is planned. If coverage by new technologies is not sufficient, Radar 2 may still be replaced.

7.26 The IAA plans to commence trials with ADS-B/WAM with a view to deploying an ADS-B network by 2015. Initially ADS-B will complement secondary surveillance radar and provide cover in areas of poor radar coverage. It will also provide a contingency layer in the event of loss of radar from a single site as a result of interference. Although the aviation spectrum is protected, interference is a growing problem for the IAA.

IT / Other

7.27 Information and Communications Technologies (ICT) are used by all parts of the business to deliver IAA services. They are a key enabler for the IAA to deliver on its business strategy. The figures included here relate specifically to the IT systems necessary to support the ANSP.

7.28 Investments in IT cover a number of areas, including replacement of key systems, enhancement of the IT infrastructure and improvements to security and disaster recovery.

Contingency

7.29 The en route ACC at Shannon is a key component of the European en route ATM environment. Both for IAA ANSP business continuity reasons, and to prevent significant delays in European airspace, it is vital to ensure that an appropriate level of contingency is in place.

7.30 While a total failure of the Shannon en route centre is a low probability event, it is a high severity event and therefore presents a significant risk. Total failures of ATC facilities are not unheard of – and recent examples of failures at Toronto and Chennai airports have caused significant disruption to domestic and international flights. It is incumbent on the IAA to have realistic and robust contingency plans.

7.31 The current contingency plan for a total failure of the Shannon en route centre involves the transfer of Shannon en route to the Dublin ACC training centre, or alternatively to the Dublin ACC itself with Dublin ACC transferring to its training centre. A reduced service of 40% will be available within 48 hours of loss of the Shannon en route facility, increasing to 60% within 120 hours. Dublin does not have sufficient controller working positions to offer 100% contingency and, additionally, the distance between the centres causes logistical issues making staffing difficult and expensive to sustain for anything beyond the short term.

7.32 The planned investment makes provision for the development of a new en route contingency facility at the existing IAA North Atlantic Communications facility at Ballygirreen. Located 5 km, from the Shannon en route centre, the significant benefits of this contingency centre include:

- the activation time of an en route contingency facility will reduce from the current 48 hours activation time for the Dublin contingency centre to 8 hours for the Ballygirreen facility. In some circumstances the requirement for flow control will be negated;
- the running costs of a contingency operation at Ballygirreen will be considerably less as there will be less requirement to pay travel expenses while the Shannon en route centre is rebuilt. Savings will also be made in the cost of carrying out regular testing and contingency exercises;

- The capacity of the en route contingency facility at Ballygirreen will increase to 80% from the existing capacity of 60% for the Dublin contingency, although at certain times of the day, the contingency centre is expected to operate to 100% capacity.

7.33 In addition to the benefits listed above, the planned contingency arrangements will be more closely aligned with industry best practice. The benefits arising from the proximity of the planned contingency centre to the existing en route centre outweighs any other options (Dublin, FAB co-sharing, etc.).

Depreciation

7.34 Due to the investments that are foreseen for RP2, as set out above, depreciation will increase due to the larger asset base.

7.35 The en route element of depreciation has been calculated by specifically allocating an appropriate proportion of the assets to en route. A consistent depreciation policy has been followed, which uses a varying depreciation period based on asset type, ranging from 3 years for ICT equipment to 20 years for buildings.

Cost of capital

7.36 The IAA ANSP commissioned an independent study on its cost of capital by First Economics. Based on their findings, a real weighted average cost of capital rate of 6.7% has been used.

7.37 In establishing a nominal cost of capital rate, the real cost of debt and equity were adjusted for an average inflation rate of 1.6% per annum has been used, leading to a nominal pre-tax WACC of 8.5%. The First Economics study was presented in November and is based on the October 2013 IMF inflation forecast; using the most recent forecast, an average inflation rate of 1.4% would be more appropriate. However, this would only affect real pre-tax WACC, not nominal values. For reasons of consistency and traceability, WACC is discussed here based on figures used in the First Economics report.

7.38 The key parameters on which this calculation was based are as follows:

Figure 7.3: Cost of Capital parameters

	Real	Nominal

Gearing	10%	10%
Cost of debt	3.5%	5.1%
Cost of equity (pre-tax)	7.03%	8.92%
Cost of equity (post-tax)	6.2%	7.8%
WACC (pre-tax)	6.7%	8.5%

Source: First Economics report

7.39 The main arguments contributing to these figures are as follows:

- The risk-free rate has been set at 2.6%. This value was based on assessment of yields on government-issued gilts, but focussing on the situation before August 2008. Over the past five years, gilt yields have been heavily affected by the financial crisis, and they therefore are not felt to be representative for the coming years. Before August 2008, yields varied between 3.5% and 5%, and in 2013 they have returned to these levels. An average yield of 4.25% was used in the cost of capital calculation, which, when corrected for inflation at an average rate of 1.6% gives a real risk-free rate of 2.6%.
- The second element of the cost of equity is a combination of the expected market return and an equity beta representing risk.
  - The market return is the sum of the risk-free rate and the equity risk premium. To determine the latter, a review of relevant assumptions in recent regulatory determinations was performed. This review identified the assumptions to largely fall within a relatively narrow band between 4.75% and 5.4%. An equity risk of 5.0% was chosen, which, together with the risk-free rate, leads to a market return of 7.6%
  - The asset beta is a function of the equity beta and the debt beta. The latter is not directly observable, and a value of 0.1 was used, which is the value also used by the UK Competition Commission in recent enquiries. The asset beta can be determined through analysis, and the equity beta can then be calculated from the asset beta and debt beta.

- The asset beta has been determined through comparator analysis and an evaluation of the risks that the IAA is exposed to under the charging Regulation, including the traffic and cost risk. The comparator analysis shows that similar organisations use an asset beta of 0.5-0.6. The evaluation of risk in particular focuses on the impact of the RAB-to-revenue ratio. Organisations with a small asset base in comparison to ongoing revenues present shareholders with a greater risk than companies with a large asset base in comparison to ongoing revenues. In this assessment, the IAA shows a proportionally smaller asset base than comparators, and therefore faces higher risk. The asset beta of the IAA's en route business was therefore estimated to be higher than the 0.5-0.6 of comparators, and fixed at 0.65 - a value that was also used by the Commission for Aviation Regulation recently.
- With the above values of the debt beta and asset beta, and a gearing ratio of 0.1 (discussed below), the equity beta is estimated at 0.71.

- The cost of debt has been calculated using the conditions of the credit facilities that the IAA has in place. The main unknown in these conditions is the Euro Interbank Offered Rate (EURIBOR) rate. Rates have recently been at historical lows, and although it seems reasonable to assume that rates will start rising again, there is some uncertainty about where the rates will settle over the RP2 period. An assumption has been made that the rate will be 2%, but First Economics stress that this is an assumption. With this rate, the IAA cost of debt would be 5.15%, which, when corrected for inflation at an average rate of 1.6% gives a real risk-free rate of 3.5%.
- The final element of the cost of capital is the gearing. First Economics indicate that it is difficult to calculate the gearing for the IAA based on current / recent performance, as the IAA is expecting zero borrowings for the foreseeable future. Because the future is uncertain, a small provision has been made for borrowing, and a gearing ratio of 0.1 has been used.

7.40 The above leads to a pre-tax real WACC of 6.7%. Tax is applied at a rate of 12.5%.

7.41 By way of comparison, this estimate sits slightly below the 7.0% cost of capital that the Commission for Aviation Regulation (CAR) included in Dublin Airport's price control. This is principally because a lower gearing has been applied for the IAA (0.1 vs. 0.5 for Dublin airport) as well as a lower cost of debt (3.3% vs. 4.1%) - higher betas were used, but their effect is offset by lower values for gearing and cost of debt.

7.42 The estimate sits above the 5.4% cost of capital that the CAR used when setting IAA's existing terminal services price control. This is principally because a higher risk-free rate was used (2.6% vs. 1.5% in the CAR's 2011 calculations) as well as a higher cost of debt (3.3% vs. 2.02%).

7.43 The Irish NSA has performed a detailed review of the approach taken by the ANSP's consultant, and of the assumptions made and references used in determining the values of the various elements the contribute to the value for the WACC. Based on this review, the NSA has accepted the WACC proposed by the ANSP.

7.44 The First Economics report is included in this document as Appendix H.

Summary overview of costs

7.45 The following Figure provides the summary overview of determined costs of the IAA ANSP for RP2 in nominal terms (except where indicated):

Figure 7.4: IAA ANSP Determined Costs

	2015	2016	2017	2018	2019
Staff (€000)	57,863.0	59,817.6	62,554.2	63,753.1	66,060.5
Other operating costs (€000)	28,447.3	27,359.7	27,357.3	27,860.9	27,264.3
Depreciation (€000)	9,605.1	10,312.8	11,062.6	12,574.7	12,383.2
Cost of capital (€000)	5,348.9	5,521.4	5.613.0	6,367.6	6,435.5
Exceptional items (€000)	0	0	0	0	0
Total costs (€000, real terms)	98,946	99,461	101,497	103,521	103,254
Service Units (000)	3,982.6	4,049.6	4.113.3	4,184.9	4.262.1
Determined unit costs (real terms)	€24.84	€24.56	€24.68	€24.74	€24.23

Source: IAA SRD

IAA (NSA)

7.46 The NSA's determined costs for RP2 will remain more of less constant in real terms. No change in staff numbers is foreseen, and the NSA is not responsible for any major investments in RP2.

7.47 The main contributing factor to other operating costs is Eurocontrol cost. Figure 7.5 provides the summary overview of DCs of the IAA NSA for RP2 in nominal terms (except where indicated).

Figure 7.5: NSA Determined Costs

	2015	2016	2017	2018	2019
Staff (€000)	1,521.0	1,542.3	1,567.0	1,593.6	1,620.7
Other operating costs (€000)	9,261.1	9,535.6	9,752.4	10,019.5	10,265.5
Depreciation (€000)	0	0	0	0	0
Cost of capital (€000)	0	0	0	0	0
Exceptional items (€000)	0	0	0	0	0
Total costs (€000, real terms)	€10,545.2	€10,727.1	€10,838.0	€10,903.0	€10,965.1
Service Units (000)	3,982.6	4,049.6	4.113.3	4,184.9	4.262.1
Determined unit costs (real terms)	€2.65	€2.65	€2.63	€2.61	€2.57

Source: IAA SRD

Met Éireann

7.48 The main driver for the costs of the Met provider in RP2 is the Aviation Modernisation and Automation Project (AMAP). The project has four main goals:

- modernising the aviation observing infrastructure to meet the requirement of a new EC Regulation currently being drafted by EASA and specified in a Notice of Proposed Amendment issued and to enable Met Éireann to meet a standard in Annex 3 to the Convention on International Civil Aviation relating to equipment deployed near runways and close off a finding arising under the ICAO Safety Oversight Audit (2010) ("Meteorological information included on ATIS is not compliant");
- proceeding thereafter to automate the aviation observations and reports to enable significant reductions in staff serving aviation and financial savings to the airlines, following developments and planned developments in this regard in European METSPs;
- enhancing safety by increasing the temporal resolution of weather observations to ATC and other users; and
- integrating weather observations of high quality and temporal resolution with ATC systems.

7.49 The program is planned for implementation from 2016. The first phase will cover modernisation to meet regulatory requirements; because of the need for regulatory compliance, there is little scope to reduce the program, but care will be taken to ensure the implementation process is as cost-efficient as possible. The second phase (from 2018) will cover automation, which will lead to significant staff cost savings that will start building up in the final years of RP2. The additional cost of phase 2, beyond the baseline of phase 1, is limited. The whole program will go through an audit under the Public Spending Code of the Irish Department of the Public Expenditure and Reform, which ensures that proper appraisals and cost benefit analyses have been carried out.

7.50 The impact of this program on costs will be discussed further below.

Staff costs

7.51 In the early years of RP2, basic staff numbers associated with the

provision of Met services to aviation will remain stable. However, aviation staff costs in Met Eireann are allocated based on staff members' level of involvement in aviation projects. This therefore affects aviation staff costs in 2016 and 2017, as more staff time is allocated to the implementation of AMAP.

7.52 This increase in staff time allocated to aviation will be removed again as the implementation of AMAP reaches its conclusion in the later years of RP2, and additionally the impact of the automation phase will start showing staff reduction benefits towards the end of RP2.

7.53 These two effects lead to a notable increase in staff costs in 2016 and 2017, followed by a marked decrease in 2018 and 2019.

Other operating costs

7.54 The other operating cost include a number of elements, of which the most important ones are as follows:

7.55 AMAP current costs: from 2016 onwards, there will be some costs associated with the operation of AMAP, e.g. due to licenses. Once the automation stage of AMAP is in place, the current costs are clearly outbalanced by staff cost savings.

7.56 EUMETSAT contribution: The Irish Government's contribution to EUMETSAT will increase over RP2. The contribution is 2019 is expected to be over 40% higher than it was in 2014.

Capex and depreciation

7.57 The capital cost of AMAP will be depreciated over an 8-year lifetime, starting from 2016.

Summary

7.58 Figure 7.6 provides the summary overview of DCs of Met Eireann for RP2 in nominal terms (except where indicated).

Figure 7.6: Met Eireann Determined Costs

	2015	2016	2017	2018	2019
Staff (€000)	4,551.0	4,783.0	5,004.0	4,383.0	3,993.0
Other operating costs (€000)	2,259.0	2,795.0	2,902.0	2,973.0	2,882.0
Depreciation (€000)	0	499.0	507.0	515.0	523.0
Cost of capital (€000)	0	0	0	0	0
Exceptional items (€000)	0	0	0	0	0
Total costs (€000, real terms)	6,662,4	7,808.3	8,020.8	7,378.6	6,819.3
Service Units (000)	3,982.6	4,049.6	4.113.3	4,184.9	4.262.1
Determined unit costs (real terms)	€1.67	€1.93	€1.95	€1.76	€1.60

Source: IAA SRD

Irish en route cost-efficiency summary

7.59 Figure 7.7 summarises the combined determined costs for the three accountable entities for Ireland, as discussed above. Costs are in nominal terms (except where indicated):

Figure 7.7: Irish combined determined costs

	2015	2016	2017	2018	2019
Staff (€000)	€63,935.0	€66,142.9	€69,125.2	€69,729,7	€71,674.2
Other operating costs (€000)	€39,967.4	€39,690.3	€40,011.7	€40,853.4	€40,411.8
Depreciation (€000)	€9,605.1	€10,811.8	€11,569.6	€13,089.7	€12,906.2
Cost of capital (€000)	€5,348.9	€5,521.4	€5,613.0	€6,367.6	€6,435.5
Exceptional items (€000)	0	0	0	0	0
Total costs (€000, real terms)	€116,163.4	€117,997.9	€120,356.4	€121,803.6	€121,038.5
Service Units (000)	3,982.6	4,049.6	4,113.3	4,184.9	4,262.1
Determined unit costs (real terms)	€29.17	€29.14	€29.26	€29.11	€28.40

Source: IAA SRD

CHAPTER 8

Terminal Navigation Services UK

Section 1: Background

8.1 This chapter presents the CAA's position on targets that will apply to the towers with an average IFR ATMs of over 70,000 in the three years to December 2013 and those on the London Approach service.

8.2 In a February 2013 advice to the DfT, the CAA considered the contestability of the market for terminal air navigation services (TANS) provision in the UK[46]. The report concluded that, on the evidence available, market conditions were not present within the provision of TANS at airports within scope of the Performance Scheme; and that there were a number of barriers to entry that are impacting on the development of competitive market conditions. Under the RP2 regulations, where market conditions have not been demonstrated, performance plans must include national targets for terminal ANS. Therefore in December 2013, the CAA launched a consultation on how to treat terminal ANS[47]. The CAA's decision was published in February 2014[48].

8.3 The CAA also commissioned independent consultants Capita Property & Infrastructure Ltd to benchmark UK TANS charges[49].

---

46 CAA, Single European Sky - Market Conditions for Terminal Air Navigation Services in the UK: Advice to the DfT under Section 16(1) of the Civil Aviation Act 1982 (CAP 1004), 28 February 2013, available from: http://www.caa.co.uk/docs/33/CAP1004SESMarketConditionsforTerminalAirNavigationServices.pdf

47 CAA, Approach to terminal air navigation services regulation in RP2 - a consultation (CAP 1132), December 2013, available from: http://www.caa.co.uk/docs/33/CAP%201132%20RP2%20–%20a%20consultation.pdf

48 CAA's decision on the approach to the regulation of terminal air navigation service in RP2 (CAP 1157), February 2014, available from: http://www.caa.co.uk/application.aspx?catid=33&pagetype=65&appid=11&mode=detail&id=6083

49 Capita Property & Infrastructure Ltd, UK TANS Charge Benchmarking, available from: http://www.caa.co.uk/docs/5/UK%20TANS%20Benchmarking_Rev%20Final%20Redacted_

This chapter contains excisions marked [✂] to protect market sensitive information.

TANS

8.4 The CAA has consulted on the application of the performance scheme to charging zone B. Charging zone B consists of those airport with over 70,000 IFR movements, measured on the average for the prior three years for which market conditions are not yet demonstrated. The towers covered by the regulation in charging zone B are:

- Heathrow Airport (LHR);
- Gatwick Airport (LGW);
- Manchester Airport (MAN);
- Stansted Airport (STN);
- Edinburgh Airport (EDI);
- Luton Airport (LTN);
- Birmingham Airport (BHX);
- Glasgow Airport (GLA); and
- London City Airport (LCY).[50]

8.5 The CAA proposed the following targets to apply to charging zone B:

- Capacity: 1.1 minutes ATFM all cause delay with no financial incentives.
- Cost efficiency: a 1 per cent additional cost efficiency off the business plan proposals.

8.6 With regards TANS this chapter employs the methodology set out in *'The CAA's approach to the regulation of terminal air navigation service in RP2'* (CAP 1157).

131209.pdf

[50] The CAA has become aware on the latest available data that London City Airport would come within scope of the regulation.

London Approach

8.7 The London Approach service is operated centrally by NERL from the Swanwick control centre. For the purposes of the performance scheme London Approach handles traffic in the London terminal manoeuvring area (LTMA) including the approach service for Gatwick, Heathrow, London City, Luton, and Stansted.

8.8 Following on from the CAA's consultation on London Approach (CAP1098), the terminal element of the London Approach service will be considered to be a separate charging zone (charging zone C) for the purposes of the charging regulation. The treatment London approach is set out more formally in *'Regulatory treatment of London Approach charges in Reference Period 2 (2015-2019) of the Single European Sky Performance Scheme: CAA Conclusions'* (CAP 1158).

Development of competition

8.9 The CAA is currently reviewing the best means available to it to aid the development of contestability within the provision of TANS in the UK. The CAA expects to make an announcement no later than the autumn on how it will pursue this. The CAA's current focus is on the delivery of performance plan. The CAA is also aware that Gatwick Airport Limited is in the final stages of its public tender process for TANS provision at Gatwick which will not complete before the submission of performance plan. The CAA shall factor the results of this into its considered approach.

8.10 Irrespective of what the CAA might do to promote competition, if the CAA cannot satisfy itself that market conditions are present within the provision of TANS in the UK (pursuant to Annex I of EC 391/2013), then it will take the appropriate action. This will include reviewing its approach to the implementation of the performance scheme to UK TANS and consider potentially tighter enforcement mechanisms.

8.11 The CAA notes that there is a lack of official guidance provided on the application of the test. The CAA has conducted an assessment under the test. In future when applying the test the CAA will seek to maintain consistency with its prior assessment, and as appropriate do so in line with best practice in competition enquiries The CAA will endeavour to work with the DfT and the Commission to develop official guidance on the application of the test.

8.12 The main concerns of the CAA under CAP 1004 surround elements 1(c), 2(a) and 3(b) of the test; those concerned with the presence of tenders, transition risk (staffing) and presence of credible alternatives to the incumbent. To that end the CAA will be looking in detail at the tender processes that have been undertaken to date at Birmingham, Luton and Gatwick, to aid in its assessment of the test.

8.13 As noted at the time of CAP 1004 the test in Annex I of EC 391/2013 does not constitute a full competition assessment. (For instance, no market definition is required.). Regardless of the outcome of any future assessment of the test the CAA may still choose to pursue the development of competition or individual competition concerns through its concurrent powers.

Structure

8.14 The remainder of this chapter is set out under the performance area headings, each section deals with TANS before considering the London Approach. The sections are as follows:

- Section 2: Safety;
- Section 3: Environment;
- Section 4: Capacity; and
- Section 5: Cost efficiency.

Section 2: Safety

8.15 The KPIs and PIs for safety are reported at the FAB level, with no specific requirements for TANS operations or the London Approach. The CAA expects the safety KPIs and PIs to be reported as set out for the overall plan in Chapter 3.

Section 3: Environment

8.16 The KPIs for Environment are reported at the FAB level, with no specific requirements for TANS operations or the London Approach. The CAA expects the environment KPIs to be reported as set out for the overall plan in Chapter 5.

8.17 There are two Environment PIs which have a reporting requirement at the airport level. These are:

(a) the additional time in the taxi-out phase, defined as follows:

(i) the indicator is the difference between the actual taxi-out time and the unimpeded time based on taxi-out time in low periods of traffic;

(ii) the indicator is expressed in minutes per departure for the whole calendar year.

(b) The additional time in terminal airspace defined as follows:

(i) the indicator is the difference between the ASMA (Arrival Sequencing and Metering Areas) transit time and the unimpeded time based on ASM transit times in low periods of traffic;

(ii) the indicator is expressed in minutes per arrival for the whole calendar year;

(iii) ASMA is defined as a virtual cylinder with a radius of 40NM around the arrival airport

8.18 PIs only require monitoring with no targets to be set in these areas. These will continue to be monitored over RP2 as they have been over RP1.

8.19 It should be noted that the 3Di incentive mechanism (discussed in Chapter 5) applied to en route services captures significant performance within the 40NM range from the airport. As a result the performance of the London Approach is a major contributor to the performance underpinning this scheme.

Section 4: Capacity

8.20 The terminal capacity KPI is defined as follows:

- the average minutes of ATFM delay per flight attributable to terminal air navigation services and caused by landing restrictions at the destination airport. The indicator;
  - is the average ATFM delay per inbound IFR flight generated by the arrival airport;
  - covers all IFR flights landing at the destination airport and all ATFM delay causes, excluding exceptional events; and
  - is calculated for the whole calendar year and for each year of the reference period.

8.21 There were some data issues with the ATFM delay figures provided in the draft NSL business plan. NSL has provided the CAA with updated tables for the business plan. Figure 8.1 presents the updated data provided by NSL including London City.

Figure 8.1: All causes ATFM delay at 8 NSL airports covered by the NSL business plan (minutes)

	Average Historic (2008-2013)	Average RP2 Predicted Outcome (2015-2019)	Difference between predicted and historical
MAN	0.32	0.32	-
LTN	0.12	0.20	↑
LGW	0.59	0.59	-
LCY	2.17	2.17	-
LHR	2.66	2.66	-
GLA	0.01	0.20	↑
EDI	0.14	0.20	↑
STN	0.09	0.20	↑
All airports	1.17	1.17	

Source: NSL business plan

8.22 Although some respondents to CAP 1132 supported NSL predicted performance over RP2 others considered that this did not pose a stretching target. The data has since been updated from the NSL draft business plan. The Figure now shows a fall in predicted performance at half of the towers.

8.23 The CAA notes that it has some difficulty in challenging the proposed ATFM delay targets for the following reasons:

- There is no agreed common methodology for forecasting ATFM delay at the UK level.
- There is no agreed framework to assess the cost and benefits on incentivising reduced ATFM delay and any resultant impact on safety.
- With the exceptions of LHR, LGW and LCY ATFM delay all causes is generally low

8.24 That said the CAA sees no reason why as a minimum the towers

should not be able to maintain at least historic performance - unless there are demonstrable changes to airspace that can be taken into account.

Figure 8.2: All causes ATFM delay at the charging zone B (minutes)

	2008	2009	2010	2011	2012	2013	Grand Total
BHX	0.02	0.06	0.11	0.00	0.03	0.06	0.05
MAN	0.33	0.35	0.38	0.23	0.37	0.28	0.32
LTN	0.13	0.41	0.07	0.03	0.05	0.03	0.12
LGW	0.39	0.47	0.93	0.24	0.93	0.57	0.58
LCY	5.96	1.88	1.46	1.22	1.17	1.34	2.38
LHR	4.33	2.14	2.50	1.81	2.57	2.59	2.66
GLA	0.01	0.02	0.02	0.00	0.00	0.00	0.01
EDI	0.20	0.11	0.22	0.26	0.05	0.02	0.15
STN	0.14	0.27	0.05	0.02	0.03	0.03	0.10
Average	1.72	0.93	1.09	0.73	1.09	1.03	**1.11**

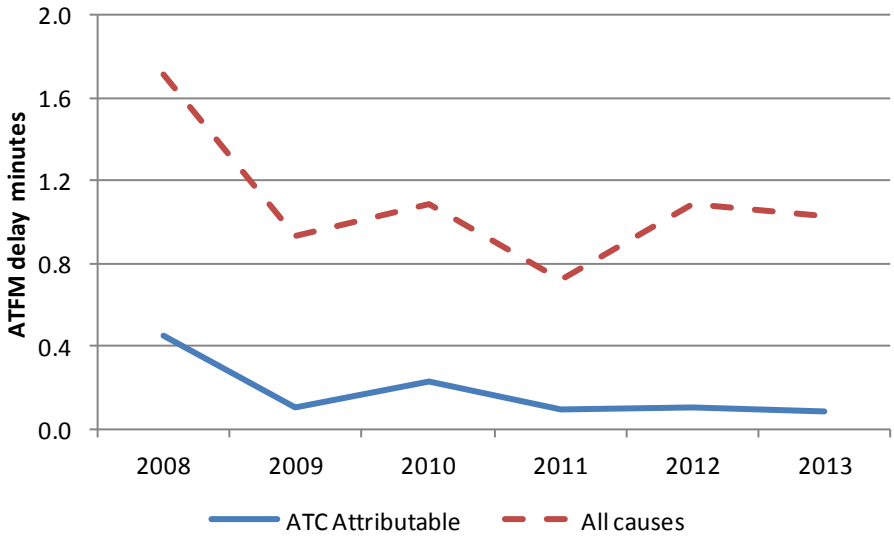
Source: Performance Review Body

8.25 Figure 8.2 presents data for the charging zone B; it presents the CAA's calculation of historic delay for each airport and in each year.[51] With the exception of Gatwick, Heathrow and London City, ATFM all causes delay has been at a low level.

8.26 Examination of the data suggests that 2008 was an anomalously high year within the data set for Heathrow and London City. With regards Heathrow Average ATFM delay of over 10 minutes is recorded in the January of the year, which could be the result of the incident involving BA38 (Beijing to London). There were also particularly poor weather conditions in the October of the year. However, February in 2009 also saw particularly poor weather and there have been a number of other events since then that do not appear to be reflected to a similar extent in the data. This suggests that 2008 saw a persistence of particularly poor flying conditions as the ATC attributable delay for 2008 is comparatively low. The year is potentially illustrative of the variability of other factors to affect ATFM delay in any one year.

[51] The table presents full year data for 2013.

Figure 8.3 ATC attributable delay



Source: Performance Review Body

8.27 Figure 8.3 breaks down all causes ATFM delay into more detail focussing on ATC attributable delay for the nine airports and the differing charging zones. This illustrates that delay within direct control of the ANSP forms a small proportion of overall ATFM delay. Since 2009 the ATC attributable delay has seen limited variance.

8.28 Over the RP2 period the draft STATFOR forecasts prepared for the CAA indicate that over RP2 there will be growth in both IFR movements at the airports as well as growth in terminal service units (TNSUs)[52]. However, given the number of variables that contribute to delay, it is not possible to state a direct link between average ATFM delay and traffic growth. Maintaining historic performance from a low growth period into an expected higher growth period is likely to provide some challenge to the ANSP. Although as highlighted in Figure 8.3 the majority of ATFM delay is outside of the direct control of the ANSP and for most of the towers at a particularly low level.

8.29 The CAA is aware of a number of initiatives, particularly at Gatwick, where the CAA would expect this to have an impact on ATFM delay performance. These factors are part of the FAS[53] and include the

---

52 TNSUs are affected by both the size and number of aircraft landing. One TNSU is the equivalent of an aircraft with 50 tonne maximum take-off weight.

53 See: CAA, Future Airspace Strategy Development Plan, December 2012:

early implementation of LAMP Phase 1, enhanced Standard Instrument Departures (SIDs).

8.30 In particular, Gatwick Airport Limited (GAL) is putting significant effort into its ACDM 55[54] project to increase its runway capacity to 55 movements per hour, which is motivating it to trial and bring forwards changes in airspace and airfield design. These include items from LAMP1A such as 'point merge arrivals sequencing' which will improve arrivals performance at the airport. The proposal is for this to be operational by November 2015.[55] In addition to the airspace changes, Gatwick will benefit from the withdrawal of Flybe from April 2014. With easyJet taking the Flybe slots there will be greater fleet uniformity at the airport. This will allow for greater consistency in separation on departure and arrivals as there will be fewer small aircraft.

8.31 The Airline Community raised a number of concerns with the LHR contribution to the AFTM delay target. The Airline Community did not agree with the level or the flat nature of the ATFM delay contribution at LHR for the following reasons:

- The historic average appears particularly high compared to recent performance.
- The CAA has not taken account of a number of initiatives that will significantly reduce ATFM delay at LHR in which they had already made significant investments through the air navigation charges.
- The CAA's consideration of the impact of the A380 was overstated due to the arrival and departure patterns of the A380's. Noting that a proportion of A380 movements occur at the shoulders of the day, when runway and airspace capacity are not an issue and impact is negligible. This weighting towards the start and end of day is likely to remain, due to these being the optimal departure/arrival times for the routes where the A380 is most used.

http://www.caa.co.uk/docs/2408/FAS%20Deployment%20Plan.pdf

54 See: http://www.gatwickairport.com/business-community/airlines-business/business/a-cdm/

55 GAL in conjunction with NATS consulted on airspace changes: http://www.londonairspaceconsultation.co.uk/?page_id=37 they will produce a report by 2 April 2014 on the outcome which will then be subject to approval by the CAA.

- The fact that LHR is capped to 480,000 movements and therefore an argument that growth over the period would make a target challenging is undermined.

8.32 The NTUS on the other hand considered there was little that could be done with the reducing ATFM delay at the LHR tower due to infrastructure restrictions.

8.33 The CAA agrees that there should be some impacts resulting from the airspace changes at LHR, however it does not consider LHR infrastructure which is not due to alter over RP2 should result in delay performance that is lower than historic performance. It has sought further consultation to understand the targets provided by the airline community as part of its response to the consultation. These projections have been built on the following issues[56]

- 2015 introduction of time-based separation should reduce delay caused by headwinds by 80,000 minutes a year.[57]
- 2017 changes to the ILS system at LHR will reduce the impact of Fog related delays at the airport
- 2018 (or possibly sooner) introduction of Independent Parallel Approaches (IPAs) will increase resilience and recovery from delays.
- 2019 implementation of LAMP phase 2 should remove most remaining causes of ATFM delay

8.34 Time-based separation was raised within the revised NERL business plan for RP2 as part of a section on improving airport performance although no linkages where made to specific impacts.[58]

8.35 The Airline Community consider that time-based separation and the implementation of LAMP phase two will have the most significant impacts on ATFM delay at LHR. They consider that this will reduce

---

56 Airlines Community Response to Consultation and Note of meeting with Airline Community representatives 17 April 2014.

57 NATS have made public statements on the impact of Time based separation on ATFM delay at LHR see: http://www.nats.aero/newsbrief/time-based-separation-heathrow-world-first/ [accessed 23 April 2014].

58 NERL RBP, page 29.

ATFM delay at the airport at least to the current level observed at LGW. The other events although not significant in themselves support greater resilience at the airport.

8.36 In discussion with the Airport operator[59] concern was raised over the uncertainty of the impact of IPA and LAMP as neither project is as near to delivery as time-based separation. Although the airport operator is keen to see these implemented, it raised that neither were wholly in the control of the TANS provider and therefore it was not proportionate to set a target on impacts out of its control.

8.37 The CAA is not aware of any particular changes at the other tower operations over RP2, other than traffic growth, that is likely to affect the ATFM delay metric to justify a fall in performance.

8.38 ATFM delay can be affected by a wide range of issues including infrastructure, staffing, fleet mix and how traffic is provided to the TANS operator. Given this reductions in delays require the combined effort of the airport operator, its ANSP, the airline community and NERL. The CAA maintains that the airport operators remain best placed to understand the particular issues impact on delay at their airport. The CAA considers it appropriate therefore to set a target that as a minimum maintains historic performance. This is set out in Figure 8.4 below

Figure 8.4 Target level of maximum ATFM delay for charging zone B

	2015	2016	2017	2018	2019
BHX	0.05	0.05	0.05	0.05	0.05
MAN	0.32	0.32	0.32	0.32	0.32
LTN	0.12	0.12	0.12	0.12	0.12
LGW	0.58	0.58	0.58	0.58	0.58
LCY	1.42	1.42	1.42	1.42	1.42
LHR	2.32	1.98	1.98	1.98	1.98
GLA	0.01	0.01	0.01	0.01	0.01
EDI	0.15	0.15	0.15	0.15	0.15
STN	0.10	0.10	0.10	0.10	0.10

[59] Note of Meeting with Heathrow Airport Limited 28 April 2014.

Average	0.87	0.78	0.78	0.78	0.78

Source: Performance Review Body/CAA

8.39 Based on discussions with the airline community and the airport operation[60] the CAA has reconsidered its position with regards the LHR contribution. The airline community has made a compelling case with regards to the level and slope of the target.

8.40 Regarding the level, as raised in paragraph 8.27, the CAA considers that the 2008 data point for LHR and LCY appear to be an outliers; it has therefore decided to remove this from its calculation of the initial level. The CAA is aware that it could be argued that the inclusion of 2008 data for LHR and LCY would represent the risk of particularly poor years over RP2. However given the limited observations and the significant difference between the 2008 data points and those in the other years this CAA considers this presents a significant distortion to the average.

8.41 For 2016 to take account of the fact that time-based separation will be in operation for traffic at LHR the CAA has considered historic performance at the tower and reduced this by 80,000 minutes as indicated by statements from NATS. This yields a target of 1.98 minutes.

8.42 The CAA is aware of the other potential impacts resulting from the airspace redesign over the period. However the CAA does not have any formal statements of evidence of the impact of these changes. There is also concern over imposing targets for projects that are out of scope of the TANS providers remit to deliver, and that are not to be implemented imminently. The forthcoming changes with the exception of time-based separation are outside of the remit of the TANS provider to affect change. The CAA has therefore decided that at this stage it is inappropriate for it to set a more aggressive target for the Heathrow tower.

Financial incentives on ATFM delay

8.43 NATS in its consultation response raised that as part of the regulation the CAA needs to provide its rationale for not imposing financial incentives in relation to the ATFM delay. The CAA does not consider it

[60] Minutes are attached in Annex A of the PP template.

is appropriate for it to apply a incentive mechanism on capacity for the following reasons:

- Article 15 is with in Chapter 3 of the charging regulation '*The financing of air navigation service provision through air navigation charges'* the CAA's interpretation of the regulation is that it does not need to apply Article 15 as the UK does not finance TANS through air navigation charges.
- A number of contracts within the charging zone already set out financial incentive measures for capacity and other aspects of service.
- The imposition of financial incentives through the regulation would in the CAAs opinion cut across the current contract arrangements. This may make the terms of those contacts unacceptable to either party, requiring at least a short-term renegotiation of the contracts or an unplanned tender by the airport operator. Given the relatively strong capacity performance the generic incentive structure set out in article 15 may not be appropriate for the situation at every tower within the charging zones.
- The CAA is unclear as to the ability of the airports to fund additional incentives schemes, other than those contained within their contracts. The imposition of an incentive scheme therefore risks having a detrimental impact on other aspects of airport operation or on the development of traffic growth at the airports.

Departure delay targets

8.44 The Airline Community, in its response to the consultation raised the possibility for the introduction of targets on departure delay. The CAA is aware that this is a significant concern for Airlines and that the TANS operator has a potentially greater role in influencing this over some aspects of ATFM delay.

8.45 However for the RP2 period targets on departure delay are out of the scope of the regulation. Further given the timescales to the implementation of the regulation it would not be proportionate to introduce targets at this time.

8.46 The CAA is aware that the ability to set credible metrics on departure delay attributable to the TANS operators is possible at LHR through the airport operator's development of A-CDM tool. However the airport

operator and the Airline Community have warned that without an A-CDM system in place credible targets would be difficult to apply and measure.

8.47 The CAA will endeavour to work with the airport operators, TANS providers and the Airline Community to explore departure delay as appropriate as part of the wider CAA work programme. For the purposes of the RP2 legislation the CAA will not be imposing targets on departure delay.

London Approach

8.48 There are no KPIs that apply specifically to the London Approach. To the extent that London Approach impacts on ATFM delay at a particular airport, this will to a large extent already be captured against the relevant airport.

Section 5: Cost efficiency

8.49 The terminal cost efficiency KPI is defined as follows:

- the determined unit costs (DUC) for terminal air navigation services. The indicator:
  - is the result of the ratio between the determined costs and the forecast traffic, expressed in terminal service units, contained in the performance plans in accordance with Article 11(3)(a) and (b);
  - is expressed in real terms and in national currency; and
  - is provided for each year of the reference period.

8.50 The benchmarking study and the draft NSL business plan published alongside CAP 1132 dealt with the 7 towers operated by NSL. Since then London City has come into scope and the CAA has also been able to engage more effectively with Birmingham Airport on their provision of TANS at Birmingham. The data for these airports has been included within the overall calculation of the cost efficiency target.

8.51 The CAA received no significant representations to its position on the cost efficiency for TANS; as such it has not deviated from its consultation position. Given the changes to the charging zones the level of the DUC has moved but the targets remain the same at traffic

plus 1 per cent.

8.52 NATS was concerned that the CAA had only considered a limited evidence base from its decision stating that: '*The setting of a cost reduction target over and above the current contracts agreed with airports risks introducing misalignment between local customer requirements and priorities. It could also encourage TANS providers to focus on meeting the cost efficiency target at the expense of other factors for which targets are not set or for which no financial incentives are applied, but which are valued by customers.'*

8.53 The NATS Trade Unions (NTUS) also raised concern over a focus on price limiting the incentive for innovation and service offer.

8.54 The CAA notes that NATS has been supportive the CAA's proportionate approach to the regulation, so as not to impose unnecessary costs and burdens on industry. Throughout the process the CAA has been clear that it would not undertake a highly detailed analysis of the underlying costs of TANS.

8.55 However, the NSL business plan supplied by NATS (as discussed below) provided limited additional efficiency above that driven by traffic growth; therefore just illustrating the density effects of operation. The CAA would have been remiss in its duties not to provide challenge to an incumbent that currently faces limited (if growing) competitive pressure, especially given the concerns put to the CAA by NSL customer base that the business plan was not suitably stretching. Additionally, as stated at the consultation, the CAA does not necessarily expect all of the additional 1 per cent per year cost reduction to be achieved within the current contracts, as they are due to expire over RP2.

8.56 As to NATS's and to some extent NTUS' concerns over a focus on cost efficiency at the expense of other factors the CAA does not share these concerns. The CAA considers that as competitive entry becomes possible the quality and breath of service offered will form a basis for competition as well as the price. Innovations such as bidding for a group of airports should still be possible and indeed would only be likely where they reduce the costs to the airport operator and therefore is aligned with the scope and intent of the regulation. The CAA consider that given the safety and operational critical nature of the service in contracting rounds airports will be looking for a provider

that delivers not just a cost efficient but a safe and reliable TANS offer.

8.57 The remainder of this sets out the CAA's reasoning on cost the cost efficiency. It is set out as follows:

- Evidence from the benchmarking;
- Assessment of the NSL business plan; and
- Cost efficiency target.

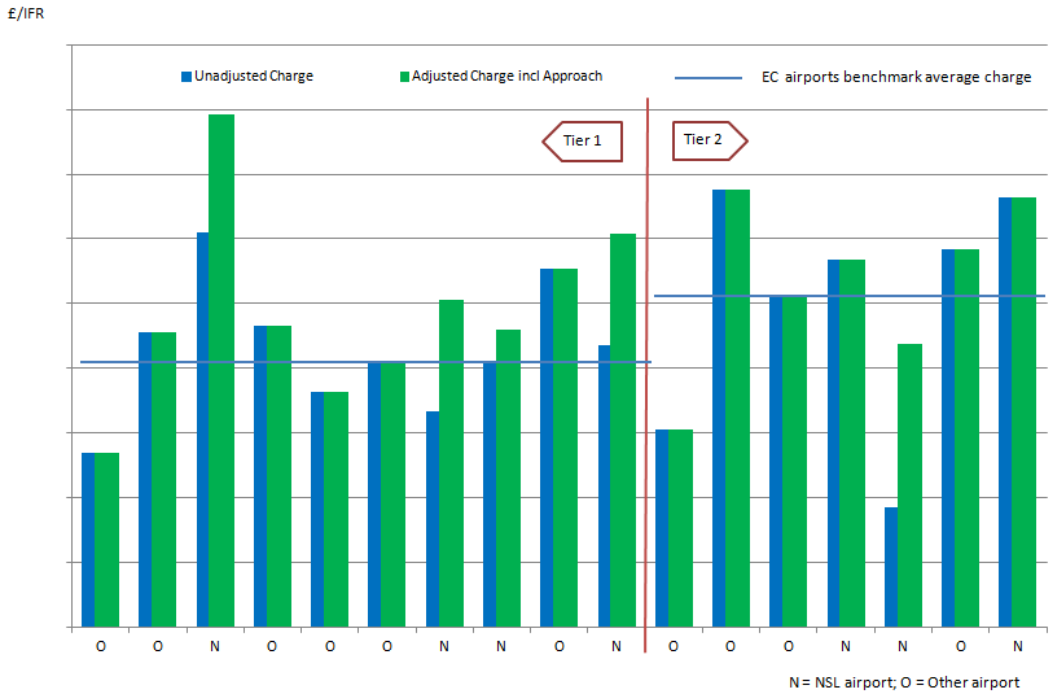
Evidence from the benchmarking

8.58 Alongside CAP1132 the CAA published a benchmarking study conducted on its behalf by Capita - *Capita (2013), No 1778 - Service Order 16: UK TANS Charge Benchmarking Consultancy Services for CAA's Regulatory Policy Group*[61]. One of the criticisms received in response to CAP 1132 as set out in CAP 1057 was the lack of available information from the benchmarking study. This section aims to provide some additional information whilst maintaining the confidentiality of the underlying data.

8.59 Figure 8.5 below shows the summary information on the relative position of the tower costs by IFR movements at the seven UK airports covered by the benchmarking study and the European comparator airports. It should be noted that the data in Figures 8.5 and 8.6 has not been normalised for complexity of operation. This does impact on the direct comparability between airports as no two operations are the same, for example there are two runways at Heathrow with a high degree of capacity utilisation whereas Edinburgh airport has one runway and lower utilisation.

[61] The Study is available on the CAA website: http://www.caa.co.uk/docs/5/UK%20TANS%20Benchmarking_Rev%20Final%20Redacted_131209.pdf

Figure 8.5: EC TANS 2015 Adjusted Charge (inc. London Approach) per IFR movement



Source: Capita (2013), No 1778 - Service Order 16: UK TANS Charge Benchmarking Consultancy Services for CAA's Regulatory Policy Group (redacted)

8.60 For tier 1 airports the average cost of an IFR movement amounted to ✂ with a range of ✂ to ✂. Similarly for the smaller Tier 2 airports the average cost was higher at ✂ with a range of ✂ to ✂ the average of the European peer ground for tier one was ✂ and for tier 2 ✂. This illustrates, broadly speaking, that there are some economies of scale within the provision of TANS.

8.61 Figure 8.6 below show how the airports compare against these various benchmarks. ✂

Figure 8.6: TANS costs per IFR movement and relative position benchmarks

Airport	Adjusted Charge	Proportion of tier average	Proportion of lowest in tier	Proportion of EU benchmark
Tier 1				
Heathrow	✂	✂	✂	✂
Gatwick	✂	✂	✂	✂
Manchester	✂	✂	✂	✂
Stansted	✂	✂	✂	✂
Tier 2				
Luton	✂	✂	✂	✂
Edinburgh	✂	✂	✂	✂
Glasgow	✂	✂	✂	✂

Source: Capita (2013), No 1778 - Service Order 16: UK TANS Charge Benchmarking Consultancy Services for CAA's Regulatory Policy Group, and CAA Analysis (redacted)

8.62 The Figures show a number of different measures of potential efficiency of the TANS operation based on the data collected in the study. Depending on the benchmark selected differences of over 70% in the cost of provision is observed. Taking the assumption that Gatwick and Edinburgh are at the efficiency frontier for their peer groups then there are potential savings to be found in the contract prices.

Assessment of the business plan

8.63 As published alongside CAP 1132 NSL presented a draft business plan[62] for the then 7 NSL airports in the scope of the regulation. As noted at the beginning of this chapter since the publication of the business plan London City has come into scope. NSL has since provided the CAA with additional data for the London City on which we have included within our assessment. However, to safeguard our stance on confidentiality that additional data is not discussed within this section, it is included along with the data from Birmingham within the Figure presented at the end of this section.

62 Available on the CAA website: http://www.caa.co.uk/default.aspx?catid=78&pagetype=90&pageid=15603

8.64 As set out in their business plan compared to 2014, NSL is planning on total DCs remaining constant in RP2, which, with a forecast increase in terminal service units of 2.0%, would result in a corresponding reduction of 2.0% per annum in real unit costs. These numbers are based on the terms of NSL's existing contracts with airport operators. These contracts all expire during the course of RP2 and therefore the expected competitive tendering processes may lead to a different profile of costs after the expiry of the existing contracts.

8.65 A number of the respondents to the consultation considered that the savings presented by NSL were insufficiently stretching. The main concern was that savings were traffic led and would not lead to a drive for potential efficiencies in the underlying cost base for TANS.

8.66 Similar concerns were raised by MAG, which considered that there were likely efficiencies to be made given the lack of competitive pressure in the industry.

8.67 The CAA agrees that cost reduction led by traffic growth is not sufficiently stretching. It also means that for airports where there is not the possibility for additional traffic growth (i.e. Heathrow) or where there may be expected declines in traffic no cost reductions are offered.

Cost efficiency target

8.68 The CAA considers that an appropriate target for TANS cost reduction would be 1% plus the declines given by traffic growth. In reaching this proposal the CAA has taken account of a number of considerations:

- the cost efficiency target set for en route;
- the headroom indicated by the benchmarking;
- the NSL business plan for the seven airports;
- the additional information provided on London City and Birmingham; and
- the CAA's aim for the development of competition within the provision of TANS.

8.69 The NSL business plan is set to deliver a minimum of 2% saving on the DUC mainly driven by traffic. This alone is not a sufficient stretch, merely indicating the density affects of increased traffic.

8.70 The benchmarking indicates that a number of the towers have costs above those of comparator airports. Although there are a couple of UK airports that have a comparatively low cost per IFR. As noted above this indicates the possible scope for potential savings. Consistent with its policy towards TANS the CAA has not undertaken a detailed and invasive bottom up assessment of each tower. Neither has it build the charging zone targets on an individualised contribution at each tower. The CAA considers that this is the most direct means available to deliver the policy intent of the regulation and not remove the incentive for competitive entry.

8.71 The EU wide target for en route is set at 2.1% plus efficiencies gained through traffic growth. If the CAA did not consider that a more competitive market may deliver costs savings it would be prudent for it to assume at least a similar decrease in the DUC at the terminal level as at the en route level. However the CAA considers that it should be competition for the provision of TANS that provides the pressure to drive down costs where appropriate.

8.72 The CAA is mindful therefore that it needs to strike a balance between a suitably stretching target and the potential development of competitors. Taking the evidence that it has available in the round the CAA considers that an additional 1% (just under half of the EU en route target) in cost efficiency above traffic driven falls in the DUC should provide some level of cost challenge to the tower operators whilst leaving scope for negotiation and the development of competition.

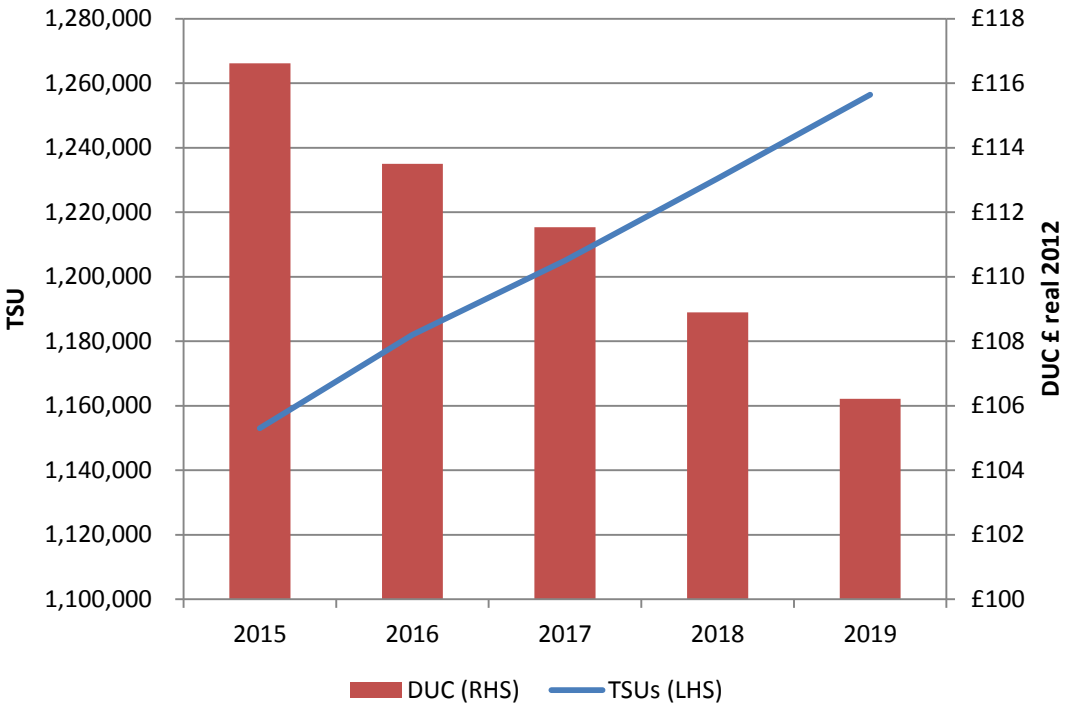
8.73 This target is intentionally set at a level that does not undermine the economics of competition, and the CAA expects that performance over RP2 to at least match if not better this target. The majority of contracts at the towers covered by the regulation are to be renewed over RP2. Birmingham has recently taken its service in house aiming to make significant savings on its cost base, Gatwick has gone to public tender, the Manchester contract runs until 2015, and towards the end of RP2 all former BAA airports will be seeking to renew their TANS provision.

8.74 Figure 8.9 sets out the overall cost envelope for the provision of TANS in charging zone B over RP2. The first line presents the baseline costs as put forward by the tower operators. The adjusted line provides for the reduction in overall costs of 1%. The traffic growth then drives

through the addition drop in the real DUC. For charging zone B traffic is due to increase by 2.2%, the DUC is not profiled and the average fall over RP2 is 2.3%.

8.75 The data set out in figure 8.7 for charging zone B has been adjusted due to the discrepancy between the contract value and the underlying costs of the ✂ operation. To include ✂ at its current contract value has potential negative impacts for its contestability going forward.

Figure 8.7 DUC and TSU by charging zone



Source: CAA

8.76 The CAA has not implemented traffic risk sharing for airports with over 225,000 IFRs movements as set out in Article 13 of EC 391/2013. The CAA considers that this only applies where the TANS is funded by direct charging through a terminal unit rate. The TANS at Heathrow and Gatwick are funded via commercial contract.

Figure 8.8: Overall cost envelope for TANS provision at airports in charging zone B for RP2

UK Zone B - Terminal	2015P	2016P	2017P	2018P	2019P
Total terminal determined costs (£ nominal)	144,696,278	148,591,950	153,373,897	157,536,077	161,675,321
Inflation index (Base = 100 in 2012)	106.54	108.56	110.73	112.95	115.20
Total terminal determined costs (£ real in 2012 prices)	135,819,345	136,875,390	138,510,076	139,479,304	140,337,361
Total terminal determined costs adjusted for cost efficiency (£ real in 2012 prices)	134,461,151	134,151,569	134,396,188	133,983,263	133,459,434
Total terminal determined costs adjusted for cost efficiency (£ nominal)	143,249,315	145,634,970	148,818,538	151,328,527	153,751,622
Terminal service units (TNSU)	1,153,063	1,181,964	1,204,982	1,230,444	1,256,452
Target DUC (£ real in 2012 prices)	£116.61	£113.50	£111.53	£108.89	£106.22
Target DUC (£ nominal)	£124.23	£123.21	£123.50	£122.99	£122.37
% reduction in DUC		-3%	-2%	-2%	-2%

Source: CAA

London Approach

8.77 Figure 8.9 sets out the overall cost envelope for the provision of the London Approach over RP2. The reductions in the DUC are provided by traffic growth over the period.

Figure 8.9: Overall cost envelope for London provision at airports in charging zone C for RP2

	2015	2016	2017	2018	2019
DC nominal (£000)	12,012	12,371	12,749	13,092	13,399
Inflation index	106.5	108.5	110.7	112.9	115.2
DC real (£000)	11,280	11,401	11,519	11,597	11,636
TNSU (000)	885	906	922	940	959
Real DUCs	£12.75	£12.59	£12.49	£12.34	£12.14

Source: CAA

CHAPTER 9

Terminal Navigation Services Ireland

9.1 Under the RP2 regulations, where market conditions have not been demonstrated, performance plans must include national targets for terminal ANS.

Section 1: Background

9.2 The Irish Aviation Authority ANSP (IAA) currently provides Terminal ANS at Dublin, Cork and Shannon airports in Ireland. Dublin is the largest of these airports with 180,000 aircraft movements forecast for 2014.

Figure 9.1: Irish airport movements

(2014 Forecast)	Aircraft Movements
Dublin	180,000
Cork	43,800
Shannon	24,300

Source: IAA SRD

9.3 The IAA is a commercial semi-State company and operates without any financial support from the Irish Exchequer. It receives no loans, grants or subventions from the State. Its ANSP division's TANS revenues are generated solely through charges and fees raised from its airline customers in respect of its operational activities at the three Irish State airports. It is therefore very sensitive to legislative and/or regulatory interventions which increase its cost base and/or impact on its revenues.

9.4 The Irish Aviation Authority Act 1993 requires the IAA ANSP to "operate and manage terminal services at State aerodromes". The State aerodromes to which the Act refers are Dublin, Cork and Shannon. Traffic volumes at Cork and Shannon airports and the fragmented nature of the flight schedules result in a very challenging business environment.

9.5 All new and/or improved processes, procedures and technology are subject to the rigorous application of the IAA's SMS and benefit from the oversight of the IAA SRD. Customers and stakeholders expect the IAA ANSP to continue to provide a safe, delay free, efficient and cost effective Terminal ATM service.

European Legislative Context

9.6 The Commission has determined that States need not apply the performance scheme to TANS at airports with fewer than 70,000 IFR air transport movements per annum[63]. As neither Cork nor Shannon has traffic at this level, Dublin Airport is the only airport to which the performance scheme should be applied. However, since all three airports are covered by a single charging zone, and because it is not considered easily possible for the ANSP to allocate its TANS costs to individual airports, Ireland will include Cork and Shannon in the performance plan specifically for the cost efficiency target, but not for targets in any other KPA.

Structure

9.7 The remainder of this chapter is set out under the performance area headings, each section deals with TANS The sections are as follows:

- Section 2: Safety;
- Section 3: Environment;
- Section 4: Capacity; and
- Section 5: Cost efficiency.

Section 2: Safety

9.8 The KPIs and PIs for safety are reported at the FAB level, with no specific requirements for TANS operations. IAA SRD expects the safety KPIs and PIs to be reported as set out for the overall plan in Chapter 3.

Section 3: Environment

9.9 The KPIs for Environment are reported at the FAB level, with no specific requirements for TANS operations. IAA SRD expects the

[63] (EU) 390/2013 Article 1 (3).

environment KPIs to be reported as set out for the overall plan in Chapter 5. Where reporting of Environmental PIs are required at airport level, these will be in place. PI's only require monitoring with no targets to be set in these areas. These will continue to be monitored over RP2 as they have been over RP1.

9.10 It should be noted that the IAA ANSP will continue work to optimise the efficiency of Terminal airspace at the State airports. Much has been achieved in this area such as P-RNAV SIDs and STARs at all 3 airports and the introduction of the Point Merge arrivals procedure for Runway 28 at Dublin. It is planned to implement Point Merge for Runway 10 at Dublin by the end of 2016 and this is expected to deliver similar savings to customers in terms of fuel burn and track mileage to those generated by the Runway 28 implementation (19% and 17% respectively).

Section 4: Capacity

9.11 The terminal capacity KPI is defined as follows:

- the average minutes of ATFM delay per flight attributable to terminal and airport air navigation services and caused by landing restrictions at the destination airport. The indicator;
  - is the average ATFM delay per inbound IFR flight generated by the arrival airport;
  - covers all IFR flights landing at the destination airport and all ATFM delay causes, excluding exceptional events; and
  - is calculated for the whole calendar year and for each year of the reference period.

9.12 In recent years, the traffic downturn has resulted in the level of IAA ANSP attributed delay at Irish airports being very close to zero. It is not however economically efficient to provide sufficient capacity to guarantee zero delay, even just those due to lack of ATM capacity.

9.13 The forecast level of traffic growth (see Figure 9.2, which gives a forecast for the combined traffic levels of Dublin, Cork and Shannon) over the RP2 period will be challenging. Growth is not expected to be evenly distributed throughout the operating day but will most likely be focused on the peak, more commercially attractive periods. This will add pressure to already capacity constrained periods and given that

there are no significant airport infrastructure enhancements planned for the RP2 period, an increase in delay is expected as traffic increases.

Figure 9.2: Terminal Service Units Forecast

Service Units					
	2015F	**2016F**	**2017F**	**2018F**	**2019F**
Service Unit Growth Forecast	141,200	144,400	148,200	152,900	156,900
STATFOR [64] Service Unit Forecast	+2.7%	+2.3%	+2.6%	+3.2%	+2.6%

Source: IAA SRD

9.14 It is however important in considering the optimum Irish terminal airspace capacity, to take into account the airfield infrastructure at Dublin Airport, the situation in neighbouring airspace - particularly the UK and the sometimes challenging conditions that exist as a result of Ireland being on the western edge of European airspace. In these circumstances, it is most appropriate to target a level of terminal delay for RP2 which recognises that the IAA ANSP does not have responsibility for or control over the development of ground infrastructure at Dublin Airport and also the effect that the interdependencies and network effects mentioned above can have on the IAA's ability to avoid delay.

9.15 The TANS capacity target can be broken down into an ANSP-attributable delays and non-ANSP-attributable delays. Based on the above, the component of the capacity target that is related to ANSP-attributable arrival ATFM delay will be set at 0.08 minutes per flight for 2015 increasing to 0.12 in 2019.

9.16 The second element of the target, the non-ANSP-attributable delay, is important because it covers the vast majority of delays that have occurred at Dublin Airport in recent years, with weather being the main cause of delays. For the past three years, average non-ANSP attributable delays have been just below 0.10 minutes per flight. It would therefore be appropriate to include a provision of this size for non-ATC causes in the TANS capacity target. It is important to note

[64] Source: EUROCONTROL Seven-Year Forecast February 2014.

that this provision was not yet included in the targets presented in the consultation documentation, as was clearly stated at the consultation meeting in March 2013.

9.17 This leads to the targets that are detailed in Figure 9.3 below.

Figure 9.3: Capacity Targets and Threshold

KPA	KPI	Targets					Threshold
		2015	2016	2017	2018	2019	
Capacity	Minutes of arrival ATFM delay per flight attributable to IAA ANSP	0.18	0.18	0.20	0.20	0.22	A deviation over a calendar year by at least 10% of the actual traffic recorded by the PRB versus the traffic forecasts

Source: IAA SRD

Section 5: Cost Efficiency

9.18 The terminal cost efficiency KPI is defined as follows:

- the determined unit costs (DUC) for terminal air navigation services. The indicator:
  - is the result of the ratio between the determined costs and the forecast traffic, expressed in terminal service units, contained in the performance plans in accordance with Article 11(3)(a) and (b);
  - is expressed in real terms and in national currency; and
  - is provided for each year of the reference period.

9.19 The IAA ANSP operates and manages terminal services at State aerodromes, Dublin, Cork and Shannon. The operators of these airports choose to keep them open on a H24 basis and traffic volumes at Cork and Shannon airports and the fragmented nature of the flight schedules result in a very challenging business environment.

9.20 The IAA is currently one of the most cost-efficient ANSPs in Europe as can be seen from the numerous metrics contained in the Performance Review Unit's ACE 2011 Benchmarking report, a sample of which can be seen in Figure 9.4.

Figure 9.4: Sample Cost Efficiency Metrics

Metric	IAA	European Average
ATCO hour productivity gate to gate (composite flight hours per ATCO hour)	0.95	0.80
ATCO employment cost per ATCO hour (adjusted for purchasing power parity)	€87	€107
ATCO employment costs per composite flight hour	€99	€127
Non ATCO in Ops employment costs per flight hour (adjusted for purchasing power parity)	€104	€150

Source: PRU ACE 2011 Benchmarking Report

9.21 Terminal reporting tables providing details of terminal costs and charges (including MET & NSA) have been included in the PP. These tables can be summarised as follows:

Figure 9.5: Determined Costs

Determined Costs – real (All Entities)					
	2015	**2016**	**2017**	**2018**	**2019**
Total Costs (€ 000s) (2012, real)	24,071	25,2597	25,629	25,936	26,039
Terminal Service Units (TNSUs)	141,200	144,400	148,200	152,900	156,900
Unit Cost (€)	€170.47	€174.92	€172.94	€169.62	€165.96
% change in DUC (+/-)		+2.61*	-1.13%*	-1.75%	-2.33%
2015-2019 % change in DUC (+/-)					-2.65%

Source: IAA SRD

Assumptions

9.22 The RP2 TANS forecast is based on a number of key assumptions. A number of these assumptions are common between en route and terminal (although the proportion of allocated cost is likely to be different:

- The rationale for the development of ANSP staff costs (including staff numbers, pay rises and pension costs) is the same for en route and terminal, with costs allocated on an activity basis.

- To calculate depreciation, an appropriate proportion of the assets has been allocated to terminal services. Similar to the approach taken for en route, consistent depreciation policy has been followed, which uses a varying depreciation period based on asset type, ranging from 3 years for ICT equipment to 20 years for buildings. Due to the investments that are foreseen for RP2, as set out below, depreciation will increase due to the larger asset base.
- Met costs are distributed between en route and terminal using an agreed 80:20 ratio. Justification for Met costs is provided in the en route section.

Regulatory Context - Ireland

9.23 It should be noted that these reporting tables 'cross-over' with the latest economic determination of the CAR which runs from 1 January 2012 to 31 December 2015. Under the RP2 regulations, the Irish NSA is required to set national targets for terminal ANS, The underlying assumptions and prevailing circumstances, as well as the current EU Regulatory Framework are quite different than those that applied in 2011 when the CAR determination for 2015 was set. This made provision for a 'real' terminal charge to customers in 2015 of €136.96 per terminal service unit, before any variable adjustments.

Cost of Capital

9.24 IAA commissioned an independent study on its cost of capital by First Economics. Details of this study are provided in Chapter 7 (with the full report included in Appendix H). Most elements of the cost of capital calculation are the same for both en route and terminal areas. The only exception of the asset beta, which is a measure for the amount of risk that the operation is exposed to. Although en route and terminal operations were considered separately, after analysis it was decided to set the same beta for both, at a value of 0.65.

9.25 Based on these findings, a real weighted average cost of capital rate of 6.7% has been used (base on October 2013 IMF inflation forecasts - see Chapter 2; this does not affect nominal WACC). The key parameters on which this calculation was based are as follows:

Figure 9.6: WACC Calculation

	Real	Nominal

Gearing	10.0%	10.0%
Cost of Debt	3.5%	5.1%
Cost of equity (pre tax)	7.03%	8.92%
Cost of equity (post tax)	6.2%	7.8%
WACC	6.7%	8.5%

Source: IAA SRD/First Economics

CAPEX

9.26 All investments are aimed to fulfil an obligation due to obsolescence, customer requirements, regulatory and legislative requirements and/or compliance with SESAR/ATM Master Plan. The IAA does not conduct research & development and wherever possible, procures commercially available, off the shelf products and services. Customisation is kept to the minimum necessary to allow the ANSP to provide a safe, cost efficient and expeditious service to the airline customers. This applies to all capital expenditure, both en route and TANS. In the Terminal Environment, the main constituents of RP2 capital expenditure will be;

- Dublin Surface Movement Radar replacement (due obsolescence) by end Q1 2015
- Advanced Surface Movement Guidance & Control System (ASMGCS) upgrade at Dublin Airport to enhance integration with stop bars on RWY16/34 and improve coverage on the airfield by end Q1 2015
- Introduce Electronic Flight Progress Strips to the Tower at Dublin airport by end Q4 2015
- Communications Switch replacement at Dublin (due obsolescence) by Q3 2015
- Upgrade of MET systems at Dublin Airport to provide fully automated reporting by end Q1 2016

9.27 The IAA ANSP will also participate in other projects such as the introduction by the Dublin Airport Authority of Airport Collaborative Decision Making (A-CDM) and will continually work to improve the efficiency of the terminal operations at the 3 State Airports.

9.28 An agreement is in place that a new control tower will be required for

Dublin airport once the annual number of passengers passing through the airport exceeds 23.5 million. For the moment, this is not expected to happen during the RP2 period. Should passenger numbers grow faster than forecast, investment plans and associated costs may need to be revised.

Operating Costs

9.29 During RP2, the following TANS initiatives are planned to drive efficiencies in the overall levels of TANS operational expenditure:

- Introduce the Point Merge arrivals procedure for RWY10 at Dublin by end Q4 2016.
- Investigate opportunities for increased efficiency and reduced operational expenditure associated with Remote Towers.
- Continue the “crew to workload” initiative, ensuring an appropriate fit between hourly costs and revenue.
- Implement a Centralised Engineering Monitoring system to drive additional efficiency from Engineering resource.

CHAPTER 10

Interdependencies

10.1 There are clear interdependencies between the four KPAs covered by performance plans.

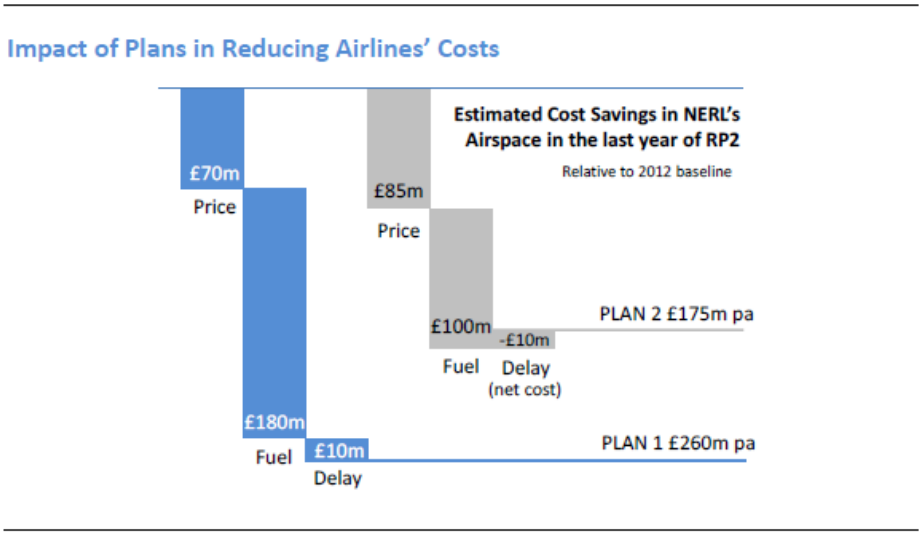
10.2 Safety is clearly an element which must not be compromised while the other three elements bearing on flight efficiency, delay and cost efficiency are factors which can be weighed up from the perspective of users based on largely commercial criteria.

Environment v Capacity v Cost Efficiency

10.3 The interdependencies between environment, capacity and cost efficiency played a major part in the process of customer consultation that NERL undertook with airline users in the summer of 2013 under mandate from the CAA. NERL issued an initial business plan with two variants in May – Plan 1 (service led) and Plan 2 (price led).

10.4 This identified the trade-off between plans shown in Figure 10.1.

Figure 10.1: Impact of Plans in reducing airlines' costs



Source: NERL Initial Business Plan

10.5 The customer consultation process took users through the various components of the KPAs and the inputs in terms of capital investment

and operating expenditure. One very positive aspect of this process was that it identified the scale of the fuel savings for users arising particularly from the LAMP programme and to a lesser extent the NTCA project. Users agreed that the objective was to maximise price reduction and fuel-efficient flight profiles whilst continuing to provide a safe, consistent and resilient service. Airlines persuaded NERL that they wanted the additional savings in plan 2 except where this impacted the timing of delivery of fuel savings through these projects. When NERL revised its business plan in October 2013 it made these changes - as well as introducing some additional savings.

10.6 It should be noted that much of this substantial projected fuel saving is based on improving trajectories around airports particularly in the vertical plane. Airlines were supportive of a focus on 3D incentives rather than horizontal incentives. (NERL has a concern which is shared by the CAA that too heavy a focus on horizontal flight efficiency could even prejudice delivery of these benefits where, for example, big benefits in vertical flight efficiency within the 40NM boundary for en route airspace around an airport implied a small deterioration in horizontal flight efficiency outside the boundary.)

10.7 NERL was operating at a level of ATFM delay at which there was relatively low scope to reduce delays at a realistic cost. Delay therefore figured in the discussions less than fuel and cost efficiency. The airlines argued that the 1% revenue cap on incentives is too low and that they would be prepared to pay more to incentivise NERL more strongly to improve performance against performance measures relevant to airlines.

Figure 10.2: Summary of changes Key inputs and outputs in the IBP and Proposed for the RBP (as presented to customers)

	Cost Efficiency (real DUC reduction per annum)	Price Reduction (real saving end RP2 v end RP1)	Operating Cost (real saving v 2011 actual)	Service (NERL attributable En Route ATFM delay*)	Service (resilience risk)	Safety (lower risk per flight)	Fuel Saving by 2019	Capital Expenditure (RP2 total 2012 prices)
PLAN 1 Service led plan at lower price	-5.3%	-17%	-12%	< 6s	Low Risk	13% (same as today)	£180m pa (276KT)	£610m
PLAN 2 Price led plan	-6.0%	-19%	-14%	6-12s	Moderate Risk	13% (same as today)	£100m pa (153KT)	£560m
REVISED BUSINESS PLAN	-5.6%	-18%	-13%	< 6s	Low Risk	13% (same as today)	£180m pa (276KT)	£575m

Source: NERL

10.8 While airlines were not persuaded that the NERL's plans went as far as they could in maximising price reductions whilst still meeting the other priorities customer consultation did provide a process for effectively identifying and acting upon these trade-offs.

10.9 The IAA SRD considered the interdependencies between environment, capacity and cost-efficiency. Mindful of the fact that Irish en route airspace is Free Route and delay is currently at very low levels, it is considered any attempt to further improve performance in these KPAs would have a disproportionate marginal cost and would not deliver net benefits to airspace users.

Respondents' Views

10.10 NATS and the NTUS have both argued that the draft plan does not provide sufficient evidence on interdependencies. In particular that there is insufficient evidence on the effects of the interventions on safety, capacity and environment KPAs. Both question the effect on whether the plan can be delivered. NATS considered that further opex cuts would undermine the foundations of the RBP and were not in customers' interests because they would create risks to service resilience and impact the delivery of complex technology and programmes.

The CAA View

10.11 In considering the effect on other KPAs safety is clearly the highest

priority. The CAA acknowledges and endorses the NATS view that as safety will always be protected, any shortfalls in operational staff availability will lead to longer delays. The relevant trade off for cost efficiency is therefore between cost efficiency and capacity and flight efficiency.

10.12 The CAA's interventions do not assume any reduction in manpower or capital investment compared to the RBP. With the exception of the intervention on contingency the interventions change the assumptions about the level of payments for various inputs rather than the inputs themselves. (The issue of contingency raises different issues which are discussed in chapter 6.) As such, it is not obvious that these interventions would necessarily affect the delivery of KPAs unless they were assumed at a level at which the appropriate level of input would not be forthcoming.

10.13 The CAA has decided on a cost of capital based on evidence set out in this paper and in the report by PwC directed specifically at estimating what it would take for market investors to invest in a business of NERL's risk. On balance the CAA considers that the cost of capital assumed should be sufficient to allow the full capital investment programme to proceed and be remunerated so it does not expect this intervention to have an effect on the other three KPAs. In forming this view the CAA notes that the airline community who bear the risk of the capital investment programme not being delivered are pressing for a lower cost of capital.

10.14 Similarly the assumptions relating to staff costs (assuming unit staff remuneration at CPI and the pensions and employee share interventions) are not likely to affect the availability of staff. Respondents have raised the effect on industrial relations. While the CAA recognises the value of NATS and the NATS Trades Unions side good industrial relations, the CAA needs to consider this issue as part of a wider balance including performance and risk. In addressing industrial relations risk and the potential effect on the other three KPAs, the CAA notes the views of the Airline Community that the CAA should take further action on remuneration and pensions.

10.15 In terms of contingency, NATS has argued that it would not deliver the full outputs and programmes of its RBP unless the full contingency allowance was restored. Clearly if NERL carried out this course of action it would have an effect on delivery and in particular delay the

major benefits from LAMP etc.

Safety Assessment

10.16 The FAB ANSPs assessed how their individual contributions to the FAB Plan's impact on safety. They also completed interdependency analyses that identified potential changes to the elements of the functional system and the possible mitigation measures to be considered.

10.17 The ANSP individual contributions (attached in Annex F of the final PP in EU template) have been assessed by the FAB NSAs to ensure consistency and also to guard against any negative impact when combined. Both IAA and NATS (NERL) ANSPs have used 'safety assessment of change' methodology to ensure that the changes planned over the RP2 period have no negative impact and where an impact is identified that appropriate mitigations have been put in place or are planned to be in place to permit the change process to take place.

10.18 No cumulative or additional effects have been noted and the plan is considered to deliver the same level of safety with increasing traffic density. The application and maintenance of SMS will provide an appropriate level of safety assurance coupled with NSA oversight activity.

NERL staff savings and voluntary redundancies (VR) and their effect on safety

10.19 NERL's final numbers for voluntary redundancies are now materially known and release dates have been agreed subject to any identified mitigations being in place e.g. balancing out the residual resources across ATC watches. In total, 245 individuals have been given VR, the majority of which are ATCO's (90) and Engineers (40). In total, 180 applications were rejected or were subsequently withdrawn.

10.20 NATS is now able to make more detailed predictions regarding ATCO numbers at the centres. For the Prestwick Centre and Swanwick Terminal Control it is predicting that the number of ATCO's will be greater than the Operational Requirement throughout RP2. These staff will be required to deliver elements of the investment programme that contribute to customer savings such as the fuel savings enables by LAMP and NTCA. For Swanwick Area Control it is predicting that

the number of controllers will dip below the current Operational Requirement (nearly 350) in mid 2017 (by approximately 10)(the shortfall is predicated to increase by a similar number in 2018 and then again in 2019). NATS has a number of options at its disposal to manage this shortfall e.g. change the operational concept by introducing more tool support, start training more staff to maintain staff numbers, increase the use of overtime, utilise more of the delay term to spread the load over the day etc.

10.21 NATS has completed a number of audits and assurance exercises across the organisation to provide a baseline against which they will proactively monitor and manage safety across the business during RP2.

10.22 The CAA is content that NATS has defined a robust process and that the assurance they have gathered /presented to date currently indicates that will be able to maintain safety throughout RP2.

CHAPTER 11

Summary of Consultation Responses

11.1 Figure 11.1 below presents an overview of all consultation responses and the NSAs consideration of points raised.[65]

[65] This figure does not include minor editorial corrections/updates included in Appendix A of NATS' response, unless points raised were related to policy issues. It also does not include issues raised by NATS in Appendix D on the FAS reporting Licence Condition, as mentioned in paragraph 5.60.

Figure 1.11: Summary of Consultation Responses

Stakeholder	Page/Para of response	KPA/KPI	Issue/Comment	NSAs response/Final PP	Reference to appropriate section in the Supporting Doc
Airline Community	Page 1	General	The response of the Airline Community represents the collective views of the Airline community in the UK and Ireland; and has been endorsed by: British Airways, IAG, AerLingus, Virgin Atlantic Airways, Ryanair, EasyJet, Monarch, TUI, KLM, American Airlines, United Airlines, Jet2, Thomas Cook, Flybe, AEA, BAR-UK, BATA, IATA, LACC (LHR).	Noted.	-
Virgin Atlantic Airways	-	General	Endorsed Airline Community response. Highlighted the following issues: Need for more consistency of targets across the FAB; Need for more consistency of incentives across the FAB; Pensions and staff costs do not go far enough in driving out the inefficiencies; WACC remains too high.	Noted. The individual issues are addressed below under the appropriate Airline Community issues.	-

British Airways	-		Endorsed Airline Community response. Unsure of the process for consultation going forward but would expect similar opportunity to discuss if such an opportunity was given to NATS.	Noted. NSAs do not intend to consult on the PP published following the formal stakeholder consultation on the draft PP.	-
Monarch	-	General	Endorsed Airline Community response. Thank the CAA for the process by which this consultation has been undertaken. We note that consultation elsewhere in Europe (including Ireland) has been sparse (if it has even been undertaken at all) thereby denying us the right to comment on a plan that will be very important to us in terms of Safety, Cost Efficiency, Capacity and Performance during the life of the next Control Period.	Noted.	-
IATA	-	General	Endorsed Airline Community response.	Noted.	-
BATA	-	General	Endorsed Airline Community response.	Noted.	-
Airline Community	Page 1	General	The airline community has had less opportunity to feedback on the Irish element of the plan.	This point is elaborated on later in the Airline Community Response and addressed by the IAA appropriately.	-

Airline Community	Page 1	General	The RP2 Performance Plan does not reflect a cohesive joined up plan for the FAB. It reflects a collective of different methodologies and factors and lacks coordination on some aspects of bonuses and metrics.	Noted. In respect of bonuses and metrics, the plan reflects the very different operational and performance circumstances of UK and Ireland. Through FAB cooperation, the UK and Ireland target projects that provide added value to the airlines through the development of seamless airspace throughout the Ireland and the UK flight information regions. At the same time, differences in the air transport context of the two States are also recognized, and differences are not harmonized at all cost but only where this delivers benefits. Some of the differences are the result of historical developments of operational and technical concepts, some are simply the result of geographical situation: the densely populated London area with many international airports, and its proximity to the busy FABEC airspace mean that the situation in the south east of the UK is very different from that in the west of Ireland – in terms of traffic levels, complexity, etc. Furthermore, when specifically looking at	-

				the key performance indicators defined in the performance scheme, the current level of performance is not the same in the UK and Ireland, and each State has its own focal areas and performance hurdles to deal with. The UK-Ireland performance plan supports FAB performance, but at the same time also recognizes local differences and does not force a common approach in all areas – in particular where optional additional KPIs and associated incentives are concerned, both States have considered the benefits of applying such KPIs on a case by case basis.	
Airline Community	Page 2	General	The targets on most performance measures are now more reflective of actual and achievable performance than those set for RP1.	Noted.	-
Airline Community	Page 2	General	Conceptually targets for TANS performance are very positive, but the targets themselves require further refinement to make them meaningful.	This point is elaborated on later in the Airline Community Response and addressed by the CAA appropriately.	-
Airline Community	Page 2	General	The use of incentivisation to provide impetus to deliver critical projects on time is a significant and very welcome response to the	Noted.	-

			community's feedback over the past regulatory cycle.		
Airline Community	Page 2	General	Supportive of the level of scrutiny of the NATS RBP opex proposals that appears to have been made by CAA for RP2, and there is evidence that CAA has correctly identified a number of elements to disallow from the plan.	Noted.	-
Airline Community	Page 2	General	The CPI cap on pay is welcome but does not go far enough to address the current and future pay levels of ATCO's. We urge CAA to review and act on the current structure of the ATCO labour market.	This point is elaborated on later in the Airline Community Response and addressed by the CAA appropriately.	-
Airline Community	Page 2	General	CAA has not taken strong enough action to limit the liability on pensions to that of a competitive entity. We expect a maximum pass though of a 20% contribution rate in line with the LHR determination.	This point is elaborated on later in the Airline Community Response and addressed by the CAA appropriately.	-
Airline Community	Page 2	General	Recognises the direction of travel for the WACC as being in the right direction, but the proposed level does not reflect the significantly lower risk of NATS than airports.	This point is elaborated on later in the Airline Community Response and addressed by the CAA appropriately.	-
Airline Community	Page 2	General	Airlines have created their own price path based on: WACC = 5.2%, which airlines consider a reasonable assumption based on NATS risk;	Noted. The individual elements were elaborated on later in the Airline Community response and addressed later in this table.	-

			Opex updated as discussed with capped pension costs and CAA removed contingency costs; Capex = 10% efficiency on cost of projects		
Airline Community	Page 3	Safety/ EoSM	Airlines considered the CAA should re-evaluate whether a further stretch, above that in the EU-set targets, could be reached in RP2. Airlines considered the EoSM target would be better pitched at the D/E level rather than the C/D level.	The safety targets were challenged and discussed at great length at the EU level and the Final Plan therefore proposes that these remain at the EU-set level. The level for ANSPs is considered sufficiently challenging by the NSAs.	Chapter 3, para 3.3-3.5
Airline Community	Page 4	Safety/ RAT	Draft plan reflects the right level of aspiration.	Noted.	Chapter 3, para 3.6-3.7
Airline Community	Page 4	Safety/ Just Culture	Draft plan target of 'demonstrated progress by 2017' is too vague. Draft plan target of 100% by 2019 target was insufficient. Additional quality measure should be added alongside the target.	Both NSAs agree that fostering a just culture environment is essential to the effective operation of successful safety management systems where open reporting is the norm. One of the key enablers to achieve this is to create a common understanding through Just Culture training and discussion with participation by all personnel in the entity. It is policy that there must be a formalised approach to training on Just Culture, both for NSA and ANSP personnel. Such training must be inclusive of personnel at all	Chapter 3, para 3.13-3.21

				accountability levels including top management. Both NSAs monitor the completeness and effectiveness of Just Culture training. New guidance on the ANSP and NSA training targets has been included in the final PP. The final PP now also addresses the quality of the training.	
Airline Community	Page 4	Environment/ KEA	Endorses the UK's adoption of horizontal en route flight efficiency of the actual trajectory (KEA) target at a FAB level.	Noted.	-
Airline Community	Page 5	Environment/ 3Di UK	Airline Community is supportive of both the retention and incentivisation of 3Di for RP2.	Noted.	-
Airline Community	Page 5	Environment/ 3Di UK	There's concern that the deadbands are too wide.	The CAA has performed further analysis, and in the light of its findings has decided to narrow the deadbands from ±10% to ±5% of the par value.	Chapter 5, paras 5.27 - 5.29
Airline Community	Page 5	Environment/ 3Di application to IAA	3Di should be extended to IAA in order to provide benchmark data.	The European Commission does not require either Ireland, the UK or the FAB to set targets for the vertical efficiency of flights and for this reason the NSA does not deem it necessary to set targets in this area. The airlines already choose the trajectory through Irish Airspace which is	Chapter 5, para 5.10

				most suited to their needs. To date, this has not been raised as an item of interest through the IAA's Customer Care programme (an NSA requirement on the ANSP). Additionally, there would be a cost to the IAA (and consequently to the customers) to access/procure a suitable 3Di tool. In the Irish en route environment, we believe such a cost would not deliver commensurate benefits to the customer. However, as various technological opportunities to evaluate vertical efficiency present themselves (including, but not limited to 3Di), and subject to their economic viability and sustainability, the NSA will consider on a case by cases basis lending our support to efforts to improve efficiency at FAB airspace level, with a view to delivering FAB-wide improvements. While placing a 3Di target on the ANSP is not currently justified the NSA will encourage use of an appropriate tool at any stage in the future where evidence suggests it will be of benefit to users.	
Airline Community	Page 5	Environment/ TA	Supportive on incentivising TA implementation. Fully endorse delivery mechanism under which	Noted.	-

		harmonisation	3Di bonuses in 2017-19 will depend on delivery of TA.		
Airline Community	Page 5	Environment/ FAS	Fully supportive of the CAA's intent to hold NERL accountable for the delivery of key elements of the Future Airspace Strategy (e.g. LAMP and harmonised TA) through a reporting condition in NERL's licence.	Noted.	-
Airline Community	Page 6	Capacity/ C1	Pending review of the C1 measure by the PRB, draft target is endorsed.	Noted.	-
Airline Community	Page 6	Capacity/ C2	Broad agreement.	Noted.	-
Airline Community	Page 6	Capacity/ C3 UK	Supportive.	Noted.	-
Airline Community	Page 6	Capacity/C4 UK	Supportive.	Noted.	-
Airline Community	Page 6	Capacity/ extension of C4 to IAA	In order to provide a consistent FAB approach to individual days of severe disruptions the measure should be extended to IAA.	The Irish NSA considered a variety of options for incentive schemes in the Capacity area. We decided that it was appropriate to apply the full available 1% penalty/reward to the average minutes of en route ATFM delay per flight. While the regulations do not preclude additional incentives, we believe that from an Irish context they would not have a material impact on behaviour, while diluting the	-

				effect of the incentive on average delay.	
Airline Community	Page 6/7	Capacity/ financial incentives pot	Broadly content with the maximum incentive pot. However, there should be more asymmetry (attaining bonus more challenging than penalty).	Noted.	-
Airline Community	Page 7/8	Capacity/ TANS	Concern that the targets detailed are not challenging enough particularly at the 2 largest airports, Heathrow and Gatwick. The logic of using a historical average high (e.g. 2.66 at LHR which is higher even than the performance for the past 2 years), is not understood and is deemed too high an initial benchmark to be of relevance. The airlines proposed specific annual targets for Heathrow and Gatwick.	Noted and reflected in calculation of the target.	Chapter 8 Section 4 8.32-8.43
Airline Community	Page 8	Capacity/ TANS	Concern that the targets set are flat across RP2 and do not recognise any of the various programmes which will realise benefit during RP2.	Noted and reflected in the calculation of the target.	Chapter 8 Section 4 8.32-8.43
Airline Community	Page 9	Capacity/ TANS	Concert that currently there are no bonus or penalty metrics attached to these targets. The level of delay inbound to an airport is driven through lost efficiencies within NERL airspace whether it be weather, staffing or technical.	Noted concern. The CAA has not imposed bonus or penalties as this would cut across the current contracting model. The CAA recognises the potential for gaming of the targets however the CAA considers that	Chapter 8 Section 4 8.44

			Traffic on approach is handed over to the Tower controller after the spacing has been set and therefore performance of the Tower has minimal impact on the level of inbound delay.	reputational incentives should minimise this risk	
Airline Community	Page 9/10	Capacity/ TANS	Concern that there is no target for TANS departure delay, which is of equal importance to the Airline Community as inbound ATFM delay. The airlines proposed a metric on departure delay at Heathrow but did not propose to attach a departure delay target to Gatwick at this juncture.	Note concern. However this goes beyond the scope of the regulation for RP2 and the CAA does not consider it proportionate at this stage to expand the target set.	Chapter 8 Section 4 8.45 - 8.48
Airline Community	Page 11	Cost efficiency/ UK general	The airlines were encouraged to see the much more rigorous and holistic approach taken by the CAA in determining the Cost Efficiency allowances for RP2.	Noted.	-
Airline Community	Page 11	Cost efficiency/ UK - MET	Question whether the MET cost base includes only costs rightly attributable to UK aviation, i.e. that services provided to other European countries for volcanic ash work is fully allocated to such countries, or at least not passed to UK aviation.	The UK Met cost base is formulated in compliance with the SES Charging Regulation and conforms with the Eurocontrol principles for cost recovery and ICAO guidance on the allocation of costs for Met services.	-
Airline Community	Page 11	Cost efficiency/ UK - opex contingenc	Supportive of CAA decision not to allow opex contingency.	Noted.	-

		y			
Airline Community	Page 11	Cost efficiency/UK - share scheme	Supportive of CAA decision to disallow scheme costs.	Noted.	-
Airline Community	Page 11	Cost efficiency/ UK - salary opex	Airlines welcomed the CAA proposal to cap NATS's opex allowance for salaries at an CPI increase, the airlines are concerned that this only addresses the future cost base, rather than addressing the concerns raised by IDS in relation to the benchmarking of current salaries (and benefits in general).	Noted. The CAA was not proposing to cap salaries, only to modify assumptions relating to pay costs The CAA considers that the assumptions that it has made with respect to pay are appropriate based on the available evidence. In the event managing the actual pay rates and structures are matters for NERL.	-
Airline Community	Page 12	Cost efficiency /UK - salary opex	The airlines would like CAA to consider the inherent possibilities of total remuneration level change which would be opened up by addressing this labour market issue.	The CAA considers that this is a wider issue which would need to be addressed at a European level.	-
Airline Community	Page 13	Cost efficiency/UK - pensions	The transparent sharing of information on the constraints on the pension scheme would have been helpful.	The CAA agrees and has invited NATS to release the information that it can on this issue with a view to achieving a shared understanding with users on this issue.	-
Airline Community	Page 13	Cost efficiency/	It is not one of the CAA’s duties to protect these constraints.	The CAA considers that not to stand behind NERL's employer covenant to honour its	-

		UK - pensions		eventual pension obligations would breach the CAA's duty to secure that licence holders will not find it unduly difficult to finance activities authorised by their licences.	
Airline Community	Page 13	Cost efficiency/ UK - pensions	Incumbent on the CAA to not allow to any risk resulting from pre-existing or ongoing DB commitments to find its way into NATS' regulated WACC.	As stated above CAA should stand behind employer covenant. (To the extent that this affects risk it will reduce the WACC.)	-
Airline Community	Page 14	Cost efficiency/ UK - pensions	Strongly agree with the concept that the airspace users should not bear the full cash contribution allowance.	Noted.	-
Airline Community	Page 14	Cost efficiency/ UK - pensions	Does not agree that the CAA's current proposals to limit pass through to 80% goes far enough to address the overly generous and burdensome NATS pension scheme.	The limitations on the pension scheme and reasoning for adopting 80% are considered in the supporting document.	Chapter 6 para 6.33-6.50 and Appendix D
Airline Community	Page 14	Cost efficiency/ UK - pensions	No compelling reason why the Heathrow Airport assessment should not apply for this review, or why the airspace users should pay any higher contribution than a 20% cap.	The constraints on the scheme (which distinguish it from e.g. Heathrow) are considered in the supporting paper.	Chapter 6 para 6.33-6.50 and Appendix D
Airline Community	Page 14	Cost efficiency/ Ireland	Given the progress made by the UK CAA, the airlines are disappointed by the apparent lack of challenge from the IAA NSA to the IAA	The Irish NSA is satisfied that we have effectively discharged our responsibilities in relation to the preparation and validation of	Chapter 7

			ANSP's proposals. Sufficient evidence is needed to give confidence that that the IAA NSA has discharged its regulatory obligations fully.	the RP2 Performance Plan in an appropriate manner. The NSA has initiated a robust process of challenge, seeking to deliver an appropriate and sustainable determined cost base during RP2 for ANSP activities. Our approach was to set very clear parameters with the ANSP as to what the NSA would deem appropriate in the various performance areas (maintaining, in a sustainable way, a low cost base, reduction in the DUC, etc.). This ensured that maximum effort was applied to producing a reasonable and sustainable ANSP Business Plan for consideration by the NSA. We are satisfied that this approach negated a protracted series of "before and after" versions of the plan, thus ensuring that the NSA's efforts were more effectively employed in the preparation of a sustainable RP2 Performance Plan. All available resources have been applied to this process. We have also retained the services of Helios, a management and technology consultancy, working in transport and technology domains, including air traffic management, airports,	

				space, telecoms, rail, maritime and defence.	
Airline Community	Page 15	Cost efficiency/ Ireland - IAA WACC	Concern over the lack of challenge and acceptance of ANSP's proposal on WACC. The airlines do not accept the level of WACC which would reflect a more risky business that that of NATS or Heathrow and Gatwick who are all privatised companies.	At the initial stages of the RP2 Performance Plan preparation and validation, the NSA discussed with the ANSP the requirement to set an objective, competitive, reasonable and sustainable WACC for the period. We recommended that an objective report by an external agency be prepared to support the achievement of this objective. The IAA subsequently commissioned First Economics to provide estimates of the costs of capital for IAA's en route and terminal services businesses. This report is intended to inform calculations of the allowed returns that are to be factored into RP2 en route and terminal services charges. The NSA applied all available resources to a consideration of the proposed rates and underlying assumptions, and we are satisfied that it is appropriate to utilise the WACC as proposed for RP2.	Chapter 7, para 7.37-7.45 and Appendix H
Airline Community	Page 15	Cost efficiency/ Ireland -	The Performance Plan states that for the IAA ANSP 'a minor reduction in staff numbers is expected over the RP2 period'. This seems to	The NSA considered a number of factors when assessing the reasonableness and sustainability of the Payroll costs included	Chapter 7, para 7.12-7.16

		IAA Pay	be incongruous when looked at in the context of staff costs are increasing by ~3% p.a. This seems to indicate either a fundamental change in grade mix, or more likely, that average salaries will be increasing at about double CPI (i.e. about 3.2% p.a.). If this level of increase were the case, it is clearly significantly above that being experienced in the rest of the UK or Irish economies. Such incremental and market uncompetitive opex above CPI should clearly be disallowed.	in the ANSP business plan submitted for RP2. These included: • IAA ANSP has had a pay freeze in place since 2011, and this is not considered sustainable for RP2 • Minor staff cost increases in RP2 (about 3% in total) includes an allowance for CPI. Provision is also made for increments (which are now contingent on performance assessment) and promotions. • A number of senior management posts have been suppressed and consolidated. • Enhanced Staff Performance Management measures now in place. • Extensive salary review has led to reduced salary scales for future post holders in ANSP. • RP1 saw an unprecedented high level of retirements from the IAA ANSP. Forecast traffic growth for RP2 means there is now only a marginal opportunity for further efficiencies in controller numbers. • The ACE Benchmarking report shows the IAA ANSP costs to be significantly below the European average in ATCO	

				employment costs per composite flight-hour and above the European average in ATCO-hour productivity (gate-to-gate). In this context the NSA is satisfied that the Payroll Costs and marginal increases indicated in average payroll costs is reasonable and sustainable. The measures taken to suppress posts, and reduce benefits to new staff, will have significant benefits to customers in RP3 and beyond.	
Airline Community	Page 15	Cost efficiency/ Ireland - IAA Pensions	Concern that lack of separation between the IAA ANSP and IAA NSA could have contributed to the late closure of the DB pension scheme, which must be costing airspace users a considerable amount. Such incremental opex should be disallowed. Allowing a hybrid DB/DC to continue to be offered to new starters is excessively and unnecessarily generous, and would not be found in a competitive market.	The Pension costs included in the Irish ANSP's Determined Costs for RP2 are based on actuarial valuations and a Labour Court agreement from 2010, that was implemented to address a very serious deficit in the IAA Pension Fund. This was of such a magnitude as to potentially impact on the ongoing sustainability of the organisation. Some of the measures implemented were: • Defined benefit pension scheme was closed to new members from 1 January 2012. A new hybrid DB/DC version applies to this category of staff. • Member contributions to the pension	Chapter 7

				scheme were increased to 6% per annum • Freeze on pensionable pay increases until July 2015 The NSA is satisfied that the totality of measures implemented to address the Pension deficit issue is delivering real benefits in terms of returning the Fund to solvency, and mitigating a very real threat to the sustainability of the organisation. This approach will, over time and beyond RP2, significantly reduce the cost of providing pensions to staff. There is a degree of interdependency to these measures, and the NSA does not believe any one item (e.g. hybrid scheme) can be considered in isolation.	
Airline Community	Page 15	Cost efficiency/ Ireland - contingency centre	Concern over the IAA's development of a contingency centre at Dublin during RP2, without any consultation with NATS over the potential use of existing UK centres at Swanwick and Prestwick. Had discussion taken place, proposals could have been made for NATS to consider using a centre in Dublin instead of Prestwick, where costs would be most likely lower.	Further clarification on the justification for the investment in the contingency centre has been added in Chapter 7.	Chapter 7 para 7.29-7.33

Airline Community	Page 15/16	Governance	The disparity between NERL and the IAA ANSP in the consultation process and opportunities for airline involvement for the RP2 period was notable, as was the apparent lack of commonality between the UK and Irish element of the FAB plan. We acknowledge that key elements are already in place but feel that governance can be developed further to ensure all aspects of the RP2 Performance Plan are successfully governed and delivered.	The Irish NSA is satisfied that we engaged in an appropriate level of consultation during the RP2 process, in accordance with the relevant regulations, and mindful that the responsibility for developing appropriate targets and rates rests solely with the NSA. The IAA has a well established process of customer consultation (Customer Care Programme) in place for many years, The Irish NSA considers this to be very important, and takes note of the comments recorded therein. As the process of Regulatory Oversight continues to evolve, the Irish NSA will consider all opportunities for further strengthening our approach to open and transparent consultation. It is worth emphasising that the current level of performance is not the same in the UK and Ireland, and each State has its own focal areas and performance hurdles to deal with. The UK-Ireland performance plan supports FAB performance, but at the same time also recognizes local differences and does not force a common approach in all areas – in particular where optional additional KPIs and associated incentives	-

				are concerned, both States have considered the benefits of applying such KPIs on a case by case basis.	
Airline Community	Page 17/18	Cost efficiency/ UK - WACC	Whilst recognizing that the CAA has correctly concluded on the direction of travel for the WACC, the proposal of 5.75% still significantly overstated the true cost of financing for NERL and was particularly overstated when taken against the WACC figures for Heathrow and Gatwick airports. Airlines considered a more realistic target for WACC would be closer to 5.00%.	The Airline Community detailed comments on NERL's WACC and the CAA's response are discussed in a separate appendix (see Appendix E).	Appendix E
Airline Community	Supplementary input on Opex Contingency	Cost-efficiency/ Opex contingency	Following their main submission, and subsequent dialogue with NERL, the Airline Community raised some concerns regarding NERL's ability to deliver its CAPEX plan without any provision for Opex Contingency. On balance, the Airline Community felt that the benefits from timely delivery of the NERL major CAPEX projects (TA, LAMP, TBS etc), outweighed the Opex Contingency cost provision in the NERL RBP; and would support the inclusion of Opex Contingency subject to appropriate governance mechanisms and the	The CAA remains unconvinced by NERL arguments that it needs the contingency to achieve the outcomes set out in its RBP, however it is mindful that the Airline Community perceives the balance of benefits and risks of non delivery of specific projects is asymmetric. The CAA has therefore made provision for a FAS Deployment Facilitation Fund of £22.5m (in nominal prices) over RP2, which will be subject to governance and any unspent monies returned to users in RP3.	Chapter 6, Paras 6.64-6.74 and 6.86-6.89

			return of any unspent funds in the following RP.		
NATS	Para 2.5	General	NATS are broadly content with the STATFOR February 2014 update.	Noted.	-
NATS	2.6	General	Note that Oceanic services are not covered in this plan.	CAA intends to consult on Oceanic services over Summer 2014.	Chapter 6, para 6.7
NATS	3.3-3.10	General	NERL considers that its RBP maximises overall customer benefits.	The pros and cons of the CAA's further interventions are considered in the supporting document.	Chapter 6
NATS	3.11-3.17	General	NERL's RBP is the most challenging plan in NERL's history. Under the CAA's proposals for reduced revenue allowances NERL would need to carefully re-examine its commitments to FAS.	The CAA considers that the revenue allowances which flow out of the cost efficiency targets in this plan and the subsequent charges determined by the Charging Regulation are based upon the assumption that the programmes and outputs in the RBP and the draft Performance Plan proceed as planned. The CAA would view any significant reduction or slowing down of this programme, in the absence of a major change in circumstances, to be contrary to the reasonable interests of users.	-
NATS	3.19-3.22	Cost efficiency/ General	Complex programmes will rely on maintaining a good level of employee engagement and support for delivering customer benefits.	Noted. The CAA considers that its proposals should not be an impediment to good	-

				employee engagement and support.	
NATS	3.23-3.29	Cost efficiency/ General	NERL's RBP builds on progress which has been made over previous control periods through good management rather than comfortable outperformance.	The word comfortable was intended to convey that NERL had exceeded expectation by a comfortable margin rather than it had been achieved without the exercise of good management.	-
NATS	3.30-3.35	Cost efficiency/ General	There are fewer opportunities for future unanticipated opex savings.	The fact that unanticipated savings are unanticipated makes them problematic to quantify. While NERL cannot make cuts which have already be made, the CAA believes that there NATS will still be scope for unanticipated cuts.	-
NATS	3.36	Cost efficiency/ General	If there is a period of material traffic shortfall, NERL will not be able to repeat the scale of actions taken in CP3 to offset revenue losses.	While NERL cannot make cuts which have already been made, the CAA believes that there will still be scope for unanticipated cuts.	-
NATS	4.1-4.3	Cost efficiency/ General	CAA interventions represent a considerable reduction to the variable costs under NERL's control and have major implications for customers.	The CAA does not agree that these should have major implications for customers. (see response to 3.11-3.17)	-
NATS	4.5-4.10	Cost efficiency and Interdepen	The CAA has not provided sufficient evidence for its proposed cuts or present its own analysis of the interdependencies with safety, capacity, and environment KPAs. NERL' own	The CAA has updated the section of Interdependencies - a response to each potential consequence noted by NATS is addressed directly below.	Chapter 10

		dencies	review is that there may be unintended consequences:		
NATS	4.8	Cost efficiency and Interdependencies	NERL unable to deliver the level of customer benefits in its RBP;	The CAA does not agree that these should have major implications for customers. (see response to 3.11-3.17)	-
NATS	4.8	Cost efficiency and Interdependencies	The interventions reduce the likelihood that NERL will earn the regulatory return that the CAA is proposing	The issue is not whether there is a reduction in the likelihood of earning the regulatory return but whether the resulting expected return is sufficient to secure that the company does not find it unduly difficult to finance its licensed activities. The CAA considers that the expected returns are sufficient to allow NERL to finance its functions under the licence.	-
NATS	4.8	Cost efficiency and Interdependencies	NERL will lack the necessary incentives to ensure efficient and necessary investments are undertaken.	The cost of capital has been considered against what the market requires to invest. The CAA therefore considers that there are sufficient incentives for NERL to invest.	-
NATS	4.9	Cost efficiency and Interdepen	Not consistent with good regulatory precedent in terms of the balance between present charges and the service risks to present or future users.	The CAA considers that it has got the right balance of risk between present charges and the service risks to present and future customers. In this context the CAA notes	-

		dencies		that the response from current users who have also considered these issues during customer consultation are arguing for the CAA to go still further in reducing the determined costs.	
NATS	4.11-4.14	Cost efficiency/ General	The CAA target for NERL exceeds EU-wide targets and contributions of other parties.	The CAA acknowledges that this is true for the EUROCONTROL agency and CAA components. It is not so for MET where the projected cost savings are greater than those for NERL. Member States are collectively responsible for the size of the EUROCONTROL budget, with individual State contributions determined by sharing keys. It is therefore not within the remit of the CAA to determine the UK component of EUROCONTROL costs. CAA has made a considerable reduction to its costs at the start of RP2, compared to RP1. During RP2, savings from established cost containment measures will contribute to the CAA's Performance and Process Improvement (PPI) programme to increase our efficiency and effectiveness as a regulator.	-

NATS	4.18	Cost efficiency/ Opex contingency	If the CAA allows no opex contingency then NERL will need to create this. Realistically this will have to come from cutting headcount in both operational and non-operational areas. This action will reduce the service resilience.	CAA's consideration of NERL's opex contingency is discussed in detail in Chapter 6.	Chapter 6, para 6.64-6.74
NATS	4.19-4.20	Cost efficiency/ General	Further cuts impact delivery of complex technology and programmes	See answer to 3.11-3.17.	-
NATS	4.21-4.22	Cost efficiency/ General	Further cuts will affect employee relations	See answer to 3.19-3.22	-
NATS	4.23-4.26	Cost efficiency/ General	A performance plan with the extent of CAA cuts is unrealistic. It cannot fund further contingency from a reduction in headcount so NERL will have to re-examine the outputs provided to customers.	See answer to 3.11-3.17	-
NATS	4.27-4.33	Cost efficiency/ General	The CAA's proposals reduce the likelihood of NERL achieving its regulatory return	See answer to 4.8 2nd bullet.	-
NATS	5.4-5.10	Cost efficiency/ Pay progression	The CAA's proposal to reduce and remove allowances for pay rate growth and progression respectively, is not supported by sufficient evidence.	Despite differences in approach between CAA's consultants and NERL consultants the CAA considers that there is sufficient evidence that when the pensions are taken into account the full benefit package for NERL staff appears very generous	Chapter 6

				compared to appropriate comparators.	
NATS	5.11	Cost efficiency/ Pay progression	NERL is prepared to accept a revenue allowance for general pay rates linked to CPI rather than CPI+0.25% (subject to reinstating the full allowance for pay progression).	Noted. See Chapter 6 for CAA decision on this.	Chapter 6, para 6.29-6.32
NATS	5.12-5.13	Cost efficiency/ Pay progression	NERL requests that the CAA makes full allowance for pay progression in RP2	The CAA has not allowed for the wage drift element of pay progression as set out in the text. It should be noted that it has implicitly allowed for the remainder of pay progression.	Chapter 6, para 6.27
NATS	5.15	Cost efficiency/ Share Scheme	NERL strongly disagrees with disallowing costs for the employees share ownership scheme.	The CAA has decided to allow the element of the costs of the scheme relating to the redistribution of redeemed shares at less than the underlying value for the reasons set out in the text. It should be noted that the internal administration costs of the scheme are already allowed under staff cost etc. The CAA has decided not to allow the element of the costs relating to the accrual of an increasing liability to redeem the 5% of shares for the reasons given in the text.	Chapter 6, para 6.52-6.63
NATS	5.16-5.18	Cost efficiency/ Share	The CAA should allow the costs of the scheme with a growth in share price assumption reflecting the finally decided cost of capital.	The CAA is allowing part of the costs (see above based on its allowed cost of capital).	Chapter 6, para 6.52-6.63

		Scheme			
NATS	5.19-5.29	Cost efficiency/ Pensions	The CAA has reduced the pension cost allowance and introduced an asymmetric pass-through. The CAA's proposals are not proportionate and are not sufficiently evidenced. -No evidence that NERL has not acted as a commercially minded employer; -The current 100% pass through allows trustees to accept greater risk. Introduction of an asymmetric pas through may accelerate trustee moves to de-risk the investment policy of the scheme at greater cost to users; -Cause a reduction in the credit rating. -In respect of the CAA's final proposals for the HAL price controls, GAD had recommended and CAA had accepted that it should not accept a change on pensions policy given the lack of any previous signal. -The stewardship test already provides an appropriate level of incentives; -The CAA reason for not making the 80% pass through symmetrical overlooks the benefits to users in CP1 and CP2 when pension contributions were lower than future service	Issues are dealt with in the supporting document.	Chapter 6 paragraphs 6.33-6.50

			costs. -Market conditions could deteriorate rather than improve. -No analysis has been offered as to how the 10% reduction has been derived. -Because the future service cost is expected to be constant the reduction represents 30%-38% of the repair deficit costs which is disproportionate. NERL requests that 100% pass through be retained.		
NATS	5.23-5.33	Cost efficiency/ Opex contingency	The CAA's previous regulatory practice allowed operating cost contingency.	Considered in the supporting document.	Chapter 6 para 6.64-6.74
NATS	5.34-5.37	Cost efficiency/ Opex contingency	NERL's operating cost contingency is not a one way allowance RBP had ambitious headcount and staff cost efficiencies Modest operating cost contingency to get a balance between ambition and realism 12 years cumulative savings means progressively less scope for further savings Over CP2 and CP3 costs unforeseen by the	CAA's consideration of NERL's opex contingency is discussed in detail in Chapter 6	Chapter 6, para 6.64-6.74

			company have exceeded cost contingency.		
NATS	5.38-5.43	Cost efficiency/ Opex contingency	There are customer benefits from the allowance of operating cost contingency.	CAA's consideration of NERL's opex contingency is discussed in detail in Chapter 6	Chapter 6, para 6.64-6.74
NATS	5.44-5.46	Cost efficiency/ Opex contingency	NERL requests that the CAA reinstate the operating cost contingency in the full amount of contingency in the RBP (Proposal A); or 50% of the contingency in the RBP, accepting some change to the plan outputs (Proposal B)	CAA's consideration of NERL's opex contingency is discussed in detail in Chapter 6	Chapter 6, para 6.64-6.74
NATS	5.50-5.67	Cost efficiency/ WACC	The CAA's proposed reduction of NERL's cost of capital is not sufficiently evidenced and is based on selective market evidence. -The CAA's assessment of a 16% reduction in NERL's business risk in RP2 relative to CP3 is not sufficiently well evidenced; -The CAA's proposals increase risk to the company in RP2 compared with CP3 but without any corresponding increase in the cost of capital; - The CAA's choice of the cost of debt is based on selective market evidence and as a result understates the cost of debt for RP2; - The CAA's estimate of the total equity market	The CAA's view now is not based on the change in risk since the CP3 review but on a range of evidence on the risk now. NATS' detailed comments on the WACC and the CAA's response are discussed in a separate appendix (see Appendix E).	Appendix E

			return is towards the low end of plausible values. This compounds the effect of its proposals on the asset beta and cost of debt. NERL proposes that the real vanilla WACC on an accounting rate of return basis be revised to no less than 4.7%		
NATS	-	Capacity/C 1	-	-	-
NATS	6.2-6.5	Capacity/C 2	The C2 target requires a transition allowance and higher par value due to 20% higher delays reported in Eurocontrol data and complexity of airspace changes.	Addressed in the supporting document.	Appendix C
NATS	6.6	Capacity/C 3	The C3 target and thresholds are set incorrectly relative to their C2 counterparts based on data for 2010-13 values they would be higher.	Dealt with in supporting document.	Appendix C
NATS	6.7-6.9	Capacity/C 3 and C4	The C3/C4 target exemption days should be set at 75, taking account of the scale of the change programme in RP2, particularly the redesign of the whole London TMA.	Accepted.	Appendix C
NATS	6.10-6.11	Capacity/C 4	The C4 target penalty threshold should be raised by at least 20% to take account of the difference between NMD data and the dataset used in CP3.	Dealt with in supporting doc.	Appendix C

NATS	6.12-6.14	Capacity/C 4	The C4 target penalty cap should be raised to a level equivalent to CP3 to avoid perverse incentives and loss of incentive from a single event.	Accepted.	Appendix C
NATS	6.15-6.21	Capacity and Environme nt incentives	CAA has applied 1% incentives to each of capacity and environment. NERL requests robust legal opinion in support of the CAA's interpretation to maintain the legal integrity of its charges (and the UK's) in RP2.	The CAA observes that it considers that the European Commission view carries appropriate weight and it has decided not to take a legal opinion at this stage.	Chapter 4 paragraph 4.4-4.6
NATS	6.22-6.26	Environme nt/ TA harmonisati on	Environmental incentives linked to TA are inappropriate. Incentivising LAMP would be more appropriate.	No constructive proposals were made on how to incentivise the delivery of LAMP. The CAA maintains its view that TA can be incentivised with more certainty than a wider project such as LAMP.	-
NATS	6.22-6.26	Environme nt/ TA harmonisati on	Disagreement with linking incentives for environmental performance [3Di] with successful implementation of TA, as it will expose NERL to increased financial risk based on the implementation of a project that is significantly dependent on external parties.	TA is a project crucial for the delivery of LAMP and in line with obligations under the Future Airspace Strategy. The CAA maintains its view that NERL's ability to earn bonuses for 3Di performance should be subject to meeting the target for TA harmonisation. The CAA notes that the target date has been moved from end of 2017 to end of QI 2018. Furthermore, in order to mitigate the risk of potential blockages in the delivery of the FAS	Chapter 5, 5.45-5.57

				programme, the CAA introduced a FAS Deployment Facilitation Fund. The Fund consists of £15m available to NATS and £7.5m available to the industry over 5 years of RP2. Details of the Fund are discussed in Chapter 6.	
NATS	6.27-6.30	Environment/KEA	FAB KEA target should be set at 4% throughout RP2	The CAA and IAA SRD have decided to retain the targets in the draft plans subject to provisos so that performance was considered against a wider picture of benefits.	Chapter 5, 5.4
NATS	6.31-6.32	Environment/ 3Di	3Di target profile should be set at a more realistic level	The profile proposed by the CAA is more challenging than that set by NATS with a view to encouraging improved performance, however the differential is not of a magnitude which represents a step-change, and NATS own proposed profile sits within the deadband.	Chapter 5, 5.26
NATS	6.33-6.35	Environment/ 3Di	3Di targets should be subject to traffic modulation	Analysis of historical data does not provide supporting evidence of a material positive correlation between 3Di and traffic.	Chapter 5, 5.34-5.35
NATS	6.36-6.37	Environment/ 3Di	3Di 'cap' and 'collar' arrangements should be based on the best and worst performance during RP1	The 3Di score is an annual average over all flights, and as such the daily minimum and maximum are outlier values. It is more	Chapter 5, 5.30-5.33

				helpful to consider the whole distribution of scores.	
NATS	-	Safety/ EoSM	-	-	-
NATS	-	Safety/ RAT	-	-	-
NATS	6.38-6.40	Safety/Just Culture	NATS considers there is a danger that the overly prescriptive 'cookbook' approach proposed by the FAB NSAs will achieve a less effective outcome than the education and training approach set out in the NATS Just Culture handbook. This more mature approach relies on helping all employees to understand the desired outcomes and provides them with greater freedom to deliver those outcomes.	The NSAs are firm in our belief that fostering a just culture environment is essential to the effective operation of successful safety management systems where open reporting is the norm. One of the key enablers to achieve this is to create a common understanding through Just Culture training and discussion with participation by all personnel in the entity. It is policy that there must be a formalised approach to training on Just Culture, both for NSA and ANSP personnel. Such training must be inclusive of personnel at all accountability levels including top management. Both NSAs monitor the completeness and effectiveness of Just Culture training.	-
NATS	6.41-6.42	Safety/ Just Culture	A more appropriate Just Culture target would be focused on improvement of the scores on	The NSAs consider that the training and monitoring will feed back into adjustment of	-

			the JC questionnaire, rather than % of staff trained.	JC Questionnaire answers.	
NATS	7.1	TANS	NAS welcomes the CAA's general approach of following EU regulations while encouraging development of a contestable market.	Noted	Chapter 8
NATS	7.2-7.4	TANS	Questions the evidence base on which the CAA has made its proposals.	Noted, however the CAA has been clear on its approach.	Chapter 8 Section 4 8.55-8.58
NATS	7.5	TANS	Setting cost targets over and above current contracts risk misalignment with local customer requirements and priorities.	Noted but disagree as airports have responded that the targets are insufficiently stretching,	Chapter 8 Section 4 8.56-8.58
NATS	7.6	TANS	NSL requests that the CAA provides further clarity in a number of key areas relating to contestability, market conditions and how EU wide targets post 2017 will apply.	Noted, additional information is provided in the draft. The CAA will consider the application of EU targets going forward.	Chapter 8 Section 1 8.10-8.14
NATS	7.7-7.8	TANS	Points out that justification for capacity targets not being applied should be provided to comply with article 15 of the EU Charging Regulation.	Noted. CAA has set out its position more explicitly in the Chapter	Chapter 8 Section 4 8.44
NATS	7.9	TANS	NERL welcomes confirmation that London Approach charges during RP2 will be consistent with the revised EU Charging Regulation.	Noted	Chapter 8
NATS	Appendix A	Investment	Various updates/corrections to text provided in	Updated as advised by NATS.	PP template -

		s (PP template)	draft PP template.		Investments
NATS	Appendix A	EoSM (PP template)	The Draft FAB Plan states that qualifying airports will also be required to respond to the effectiveness of safety management questionnaire, with the NSAs monitoring them accordingly. This is inappropriate because there is no requirement for the qualifying airports to read this plan. The text referring to qualifying airports is not relevant to the FAB Plan as currently written.	This statement is to promote an awareness that the Regulation (390/2013) also applies to airports with greater than 70 000 IFR movements in relation to the Safety KPIs and Safety PIs.	-
NATS	Appendix A	RAT (PP template)	According to the national level table for Safety – RI, NERL is required to report on runway incursions. This is incorrect since NERL does not provide runway ANS. NATS propose to remove the RI figures from the NERL part of the National level table	It is accepted that NERL will not report on Runway Incursions. However, as with the statement above qualifying airports where NATS (NSL) is the ANSP will be required to participate in relation SKPIs and SPIs.	-
NATS	Appendix A	Environment KEA	The FAB target for KEA does not note that there are exceptional events or uncontrollable factors which could affect NERL's ability to meet the target.	Accepted and bullet added.	Chapter 5, para 5.4, second bullet
NATS	Appendix A	Environment	There is a significant analysis and reporting burden associated with KEA Environmental KPI, which is not incentivised. NATS will already be incentivised on a	Some text was added to paragraph 5.4 on quantification of savings in fuel burn. The CAA notes that the reporting requirement for KEA is in itself an incentive.	-

			stringent performance regime associated with 3Di, and will additionally be exploring a FAB 3Di trial with the Irish. NATS has already suggested that the KEA target will not be met, and therefore these requirements will be triggered. The CAA should allow NATS to demonstrate that its projects are delivering fuel burn benefits greater than the targeted level of performance under KEA. Such benefit assessments already fall out of NATS' internal calculation mechanisms (supporting the delivery of projects) and will be shared with customers through the enhanced SIP process. Therefore, this reduces the analysis burden whilst still justifying that benefits are being delivered in excess of the targeted level of performance required by KEA (only that those benefits are not captured by the KEA metric). NATS proposed that a statement is included indicating priority given to 3Di over KEA incentive.	It is mandatory for the FAB to have an incentive scheme on the environment KPA. NSAs agreed that a financial incentive scheme would not be appropriate for this new KPI and therefore included a non-financial incentive in the form of an obligation to draw up action plans when targeted performance isn't met.	
NTUS	Page 6	Safety/ General	We question the robustness of the plan for achievement of safety performance given the challenging cost-reductions in the Draft	See updated text on Interdependencies in Chapter 10.	Chapter 10, specifically para 10.16-10.22

			Performance Plan which go further than the NATS Revised Business Plan. Although it is noted that 'safety assessment of change' methodology has taken place, there is little detail other than vanilla statements. We question the robustness of this methodology considering the impact of staff reductions is not yet known, and that the introduction of new technologies within NERL is not yet properly defined		
NTUS	Page 6	Safety/ Just Culture	Joint policy statement is welcomed, although the decision tree is too constraining.	The decision tree is only used as an example; NSAs maintain view that it suits the policy statement.	-
NTUS	Page 7	Safety/ Just Culture	Introduction of JC target is welcomed, but the proposed target is not sufficient or adequately defined. Suggestion to use the EC questionnaire results as a benchmark to drive improvement.	Targets have been further defined in the final PP along with guidance. A monitoring regime to ensure quality of the training has also been introduced.	Chapter 3, para 3.13-3.21
NTUS	Page 8	Capacity/ General	The NTUS are broadly supportive of the capacity targets which closely follow the CP3 approach.	Noted.	-
NTUS	Page 8	Capacity/ C4	Wish to see retention of a bonus opportunity against C4 performance to incentivise NATS to pro-actively tackle systems issues.	Failure against this measure relates to exceptional events and a reasonable user expectation of such events is likely to be zero.	Chapter 4, 4.35

NTUS	Page 8	Capacity/ C3 and C4	We recognise the different nature and complexity of the airspace across the FAB and therefore believe that it is appropriate to set UK specific capacity targets.	Noted.	-
NTUS	Page 9	Environment/ KEA	Agree that the proposed UK-Ireland FAB targets are appropriate.	Noted.	-
NTUS	Page 9	Environment/ 3Di	Support the approach to the use of 3Di metrics as opposed to a simple horizontal efficiency measure.	Noted.	-
NTUS	Page 9	Environment/ TA incentivisation	Do not support the approach of a penalty associated with the introduction of TA. This project is complex, part of a much wider project and has many different stakeholders, which are outside NATS' control. A more appropriate target would be to identify an appropriate incentive/penalty associated with the implementation of LAMP.	No constructive proposals were made on how to incentivise the delivery of LAMP. The CAA maintains its view that TA can be incentivised with more certainty than a wider project such as LAMP.	-
NTUS	Page 10	Environment/ 3Di	Do not consider the calculation to be at an appropriate level at 33% as it appears arbitrary and without an empirical base, or have any evidence to support it.	The 3Di score is an annual metric, calculated as the average across all the flights in the year, whereas a daily minimum or maximum represents an extreme value. It is more appropriate to consider the complete distribution of the daily 3Di scores for 2013. The transformed 'cap' and 'collar' under the revised RP2 model have been	-

				set at +/-28% to recognise the narrowing of the deadband, but maintain the rate of bonus/penalty as per the draft.	
NTUS	Page 10	Environment/ 3Di	No specific objections to the deadband.	Noted.	-
NTUS	Page 10	Environment/ 3Di	Proposed 3Di par value is unnecessarily stringent in its reduction over RP2.	The profile has been set with the intention of encouraging improved performance by NERL, however, the use of a deadband aims to avoid undue bonuses/penalties falling due. The differing approaches to transforming the draft targets under the revised model have brought the NATS and CAA profiles closer in line with each other, although the CAA does not consider this to be a reduction in the performance targeted.	-
NTUS	Page 11	Cost efficiency	Do not endorse the level of cost-reduction either in the NATS Revised Business Plan or the further reductions envisaged through the measures proposed by the CAA in the Draft Performance Plan and believe that the viability of the draft PP as a whole is undermined by these adjustments.	Noted. The CAA's consideration and decision on the appropriate level of cost efficiency is discussed in detail in Chapter 6.	Chapter 6
NTUS	Page 11	Cost efficiency/ Pensions	NTUS has worked with NATS to implement changes to the NATS Pension Scheme based on the requirement to have a sustainable	Noted. While the CAA recognises the value of NATS and the NATS Trades Unions side good industrial relations, the CAA needs to	Chapter 6 and 10

			funding level and to address the size of the deficit. We would not accept the proposition that further changes should or can be made, and if any attempt to do so was not in line with the principle of honouring the existing pension promise to staff, this would risk industrial unrest and jeopardise the Working Together relationship with NATS and the Trade Unions that has been largely responsible for delivering significant transformation of the NERL Business without the disruption seen in some of our European neighbours.	consider this issue as part of a wider balance including performance and risk. In addressing industrial relations risk and the potential effect on the other three KPAs, the CAA notes the views of the Airline Community that the CAA should take further action on remuneration and pensions.	
NTUS	Page 12	Cost efficiency/opex contingency	While we appreciate the CAA's general aversion to making allowance for contingencies, our concern is that there will be a great many uncertainties and external dependencies in RP2 that will mean provision for contingency is justified. Many projects such as LAMP, TA, the investment programme, deploying SESAR all depend on external factors that are outside of NERL's control.	CAA's consideration of NERL's opex contingency is discussed in detail in Chapter 6	Chapter 6, para 6.64-6.74
NTUS	Page 13	Cost efficiency/ Staff costs	NTUS challenges the reliability and quality of the findings presented by IDS and hence challenges the CAA's amendment of staff costs in the Revised Business plan.	Addressed in the supporting document. NB. The CAA proposals were to assume no wage drift rather than no pay progression	Chapter 6 paras 6.15-6.50

			While it is true that the majority of staff are eligible to receive progression payments, we know that the majority of staff are on their grade maxima already. Consequently, the monies invested in progression are much lower than might seem to be the case and probably made to around two in five staff. Furthermore, NTUS believes that the organisation derives value from the progression system as it progresses specialist staff to the rate for the job and such staff are effectively being underpaid against the rate for the job until they are at the payband maximum. Pay progression is also key to retaining staff.	overall.	
NTUS	Page 13	Cost efficiency/ Staff costs	Challenge that the Draft Performance Plan makes no allowance for a general drift in salaries in each category of staff due to increments and therefore finds it would be inappropriate to allow for pay progression as a whole over RP2 in excess of CPI.	As above.	-
NTUS	Page 13	Cost efficiency/ Staff costs	There have been no days lost to industrial action in NATS in the last 32 years. This represents three decades of industrial harmony at a current terms cost of £50m per day were UK airspace to be closed. Interfering with fundamental staff terms and conditions	Noted concern. The CAA considers that the assumptions relating to staff costs (assuming unit staff remuneration at CPI and the pensions and employee share interventions) are not likely to affect the availability of staff. Respondents have	Chapter 6 and 10.

			risks upsetting that relative equilibrium. There is a genuine risk of industrial disputes arising particularly given the significant headcount reduction both before and during RP2 and the ongoing cost efficiency measures which impact on staff (including non- staff costs)	raised the effect on industrial relations. While the CAA recognises the value of NATS and the NATS Trades Unions side good industrial relations, the CAA needs to consider this issue as part of a wider balance including performance and risk. In addressing industrial relations risk and the potential effect on the other three KPAs, the CAA notes the views of the Airline Community that the CAA should take further action on remuneration and pensions. While the CAA recognises the value of NATS and the NATS Trades Unions side good industrial relations, the CAA needs to consider this issue as part of a wider balance including performance and risk. In addressing industrial relations risk and the potential effect on the other three KPAs, the CAA notes the views of the Airline Community that the CAA should take further action on remuneration and pensions.	
NTUS	Page 13	Cost efficiency/ Staff costs	Office of Budgetary Responsibility (OBR) economic growth forecasts have been increased since the Autumn Statement in December 2013 and the OBR has forecast that	Noted concern.	-

			average earnings are expected to grow faster than CPI inflation this year and keep pace with RPI inflation next year. This expected growth should be taken into account in the calculation of the allowance for staff pay increases (currently restricted to CPI in the Performance Plan) as such a constraint would lead to staff pay falling behind the private sector.		
NTUS	Page 14	Cost efficiency/ Pay progression and Share Scheme	Both on the question of Pay Progression and on the allowance for the Employee Share Scheme we do not accept a position whereby the regulator is seeking to micro-manage the business and seek withdrawal of a contractual term and condition of employment.	This does not represent a CAA target for pay. This is not a budget or cap for pay either collectively or for particular types or grades of staff nor is it intended to require the company to move to any particular structure. This does not represent any attempt to micro-manage the business	Chapter 6 paras 6.29-6.31
NTUS	Page 14	Cost efficiency/ Share Scheme	CAA identifies the Employee Share Scheme as 'anomalous' and therefore proposes to exclude this element of cost from the plan. As with the position concerning pay progression, this is an existing contractual commitment which forms an important part of employees' remuneration package. We oppose a position whereby the Regulator is seeking to influence withdrawal of a contractual term and condition of employment.	Addressed in the supporting document.	Chapter 6 paras 6.52-6.63.

NTUS	Page 15	TANS	We believe that it is important to recognise signs of the emergence of a contestable market. As the ANS services at UK airports are provided through commercial contracts, the focus should be on the delivery of value, with incentivisation for the ANSP to deliver on capacity and delay. It would be perverse if innovation at airports was to be stifled through arbitrary price reductions where the larger airports already have their charges to airlines regulated.	Noted concern.	Chapter 8
NTUS	Page 15	TANS Capacity	Proposed UK terminal Capacity targets are generally appropriate, with the exception of Heathrow which is constrained primarily by infrastructure. Whilst the ATS provider can make small changes with initiatives such as Time Based Separation (TBS), this ability is limited and should be more reflected in the target.	Noted concern, however this does not match with statements made by NATS around the impacts of airspace changes	Chapter 8
NTUS	Page 15	TANS	The regulation could potentially force NSL to renegotiate some of their current binding contracts without due regard for the structure of these contracts, or the cost structure within them, leading to undesired outcomes for our members, and subsequently to the Airports	Noted. The CAA has tried to apply the regulation in an appropriate and proportionate manner so as not to interfere with the extant contracts. Targets are set at a charging zone or national level as such the CAA does not consider it should impact	Chapter 8

			and Users. By forcing cost reduction, there is no leeway allowed for an ATS provider to add value or additional services into the contract, which is one of the many innovative ways NATS and our members are engaging with the Airport community. By just reducing cost, we would also argue you are reducing value for money as you force the ATS providers to strip all but the essentials out of the Operation, thereby not allowing additional support, services, or skills to be shared with the Airports, or for contingencies. By driving down individual contract costs, the CAA restrict the potential for innovative solutions such as a 'group' bid, where more than one airport in a business group is contracted to a single ATS provider, often providing additional value to the Airports, and the Users.	on innovation at individual towers.	
NTUS	Page 15	TANS	NTUS understands the need to regulate certain airports, but we contend that at economically regulated airports such as Heathrow and Gatwick, the CAA is essentially forcing dual regulation onto the ATS providers as it is inevitable that an Airport Operator with a reduction in revenues will push down hard on	Noted. The CAA does regulated Heathrow and Gatwick at the level of its average passenger charge to induce efficiency of operation. The airport only has the ability to push down supplier costs where alternatives suppliers are available. At the moment the CAA does not consider this is	-

			its suppliers, such as the ATS providers.	the case. It understands the concern but does not consider that it has significant impact at this time.	
NTUS	Page 16	Interdependencies	There is a considerable 'gap' in the analysis of interdependencies between the KPAs. The Draft Performance Plan provides no evidence as to how the interventions proposed by the CAA are balanced or how these will affect the overall achievability of the plan and the resultant impact on four KPAs are not determined.	Noted and addressed in the supporting doc.	Chapter 10 paras 10.11-10.15.
NTUS	Page 17/18	DSOT trial	NTUS rejects the value of the DSOT trial as part of the UK-Ireland FAB. We contend that the cost of the scheme is in direct contravention of the performance scheme aims. We also contend that concepts of free route airspace and dynamic sectorisation have been confused and that without appropriate Social Dialogue is likely to lead to industrial disharmony.	Noted. DSOT is a phased trial intended to gather evidence and data that will be used to inform the FAB on options for consideration of deployment of the concept within FAB airspace.	-
NTUS	Page 19-21	Social Dialogue	Proposal on the introduction of a Local Performance Indicator and an associated target on Social Dialogue.	The CAA considers that the introduction of a new metric and associated target on social dialogue does not align to the extant Key Performance Areas currently provided for in the Performance Regulation and EU	-

				target Decision for RP2. Therefore, the introduction of such a metric would not directly support the achievement of the RP2 EU targets or improve performance in safety, capacity, environment and cost-efficiency. Notwithstanding, recognising that social dialogue is a key feature of the SES, the CAA considers that it is appropriate for NTUS to engage, through the European Transport Workers Federation (EFT), with the PRB and European Commission with a view to exploring the appetite for development of a performance indicator, within the SES Performance framework. Noting that any such indicator must be appropriate for the purpose intended, that is, it should be: Objective and quantifiable Simple to understand and to explain Reliable and repeatable Proportionate, delivering benefits which outweigh the costs Consistently indicate improvements or degradations in performance	

				Any measure developed would need to effectively target the relevant dimensions of social dialogue (for example, the quality of communications), and any future target level should be evidence based.	
IATCA	1	Safety/ Just Culture	No agreement between ATC Branch and the IAA about Just Culture policy. If the IAA continues to perpetuate the myth that it has such a policy and if it continues with an unagreed plan to train ATCOs, this Branch will have no option but to instruct its members not to comply with this training programme.	Noted by the Irish NSA.	-
IATCA	2 (first paragraph)	Irish ANSP Contingency Centre	In December 2013, Mr Eamonn Brennan, CEO IAA, made a series of presentations to the staff of the Authority. In these presentations, he outlined capital spend for the period 2014 – 2018. For a new contingency centre based near the current Shannon ACC, €5m was allocated. The figure in the Draft is €13m – a 160% increase. The Branch disputes the need for such an increase in investment given that the use of any new facility is purely for contingency. Budget for contingency centre has been increased by 160% which is unnecessary.	IAA can confirm that the IAA ANSP Business Plan (as validated by the NSA) includes an investment in a contingency centre to cost €13m. This comprises a build cost of €5m and a “fit out” cost of €8m.	Chapter 7

IATCA	2 (second paragraph)	Dublin Airport ATC Tower	At the presentation to stakeholders on March 14th, it was stated that there was no plan to build a new Tower at Dublin airport. At the December presentations to staff, the CEO announced a €50m investment in this project and that it was due to commence in Q4 2014. One can only imagine that this Draft was well in development by mid-December, along with financial planning for RP2. It is hard to correlate two such extreme standpoints from the one organisation.	We can confirm that the IAA ANSP Business Plan (as validated by the NSA) does not currently include any provision for construction of a new ATC Tower in Dublin to come into operational use during the 2015-2019 RP2 period. If this were to change in the life of RP2, then the NSA would evaluate the proposed spend in the same manner as the capital items currently included.	Chapter 9
IATCA	2 (third paragraph)	CAR	The Branch also takes issue with the statement to attendees at the stakeholders' meeting in London that the Irish Commission for Aviation Regulation may no longer have a role in determining terminal charges for Irish airports. As far as we are aware, the Commission has already invited submissions from interested parties before it determines the terminal charge applicable for the next reference period beginning in January 2016.	The Irish NSA is required, under the RP2 regulations, to produce targets and rates in the areas of Terminal Capacity and Cost Efficiency. These are included in the RP2 Draft Performance Plan for each year from 2015 to 2019. It should be noted that these reporting tables 'cross-over' with the latest economic determination of the CAR which runs from 1 January 2012 to 31 December 2015. The underlying assumptions and prevailing circumstances, as well as the current EU Regulatory Framework are quite different than those that applied in 2011 when the CAR determination for 2015 was set. The Department of Transport, Tourism	-

				and Sport will consider the wider regulatory framework in this area, and provide relevant clarification to stakeholders in due course.	
IATCA	3	Irish ANSP costs	The ATC Branch takes the standpoint that a portion of any savings/financial benefit accruing to IAA as a result of the introduction of common amendments to Transition Altitude should be passed onto the staff.	The NSA can confirm that the IAA ANSP Business Plan includes a capital expenditure provision of €3.5m in relation to the Common Transition Altitude project. In common with all other items of Capital Investment in the draft RP2 Performance Plan, this has been appropriately reflected in the Irish cost base, along with any relevant interdependencies. It is outside the scope of the NSA to either determine or comment on the way the IAA ANSP allocates individual costs, so long as they remain within the overall Determined Costs for RP2.	Chapter 7
PSEU	-	Irish ANSP costs	In Chapter 7 of the consultation document, the Irish NSA proposes to cut Administration Costs by 10% in 2016. Can you elaborate on how it is proposed to make these cost savings?	It is worth clarifying that the NSA does not have a role in setting any individual cost category. This is the responsibility of the ANSP when they prepare a business plan for validation by the NSA. With regard to this query on Administration costs in 2015 and 2016, the NSA can confirm the following.	Chapter 7

				• The Administration costs figures quoted in Chapter 7 of the consultation document are a combination of the following individual cost categories; Policy Costs, Rent & Rates, Insurance, Public Relations, Legal & Professional, Security, Cleaning & Facility Mgt., Building Repair & Maintenance, Computer Maintenance & Supplies, General Office Supplies, Incidentals, Agency costs. • The reduction in administration costs 2015 -2016 is a consolidated effort of cost reductions in the areas listed above. • Administration costs in this capacity do not relate to Administration staff headcount & payroll.	
DAA	-	Safety/ Just culture	Training and culture are vital to support an atmosphere of trust in which individuals and organisations are positively encouraged to report safety related incidents, whilst still understanding the line between acceptable and unacceptable behaviour. The DAA welcomes the reiteration of policy, the approach being taken and the KPIs/targets set, and will play its part in ensuring a Just Culture at its airports.	Noted.	-

DAA	-	Flow control limits	The DAA would like to see a stated objective of removing the current flow control limit of 15nm longitudinal spacing between successive Dublin Airport departures via LIFFY. The current (longstanding) constraint is, we understand, due to the difficulty of handling the volume of eastbound oceanic traffic – particularly in the mornings – which enter Irish airspace at twelve points but currently exit to the UK via only three. With the likely implementation of RLatSM in the ICAO NAT region during RP2, it appears to us that the opportunity for bunching of traffic in the NAT region will increase, and unless steps are taken to improve capacity at the UK-IRE FIR boundary, we would be concerned that Dublin Airport's ability to "free flow" departures into and overflying the UK will be compromised further.	The introduction and use of the Y124 Airway has alleviated the need for Dublin to increase the longitudinal spacing between successive departures from Dublin. If the traffic presentation from the ICAO NAT region changes to "bunching of traffic" it is envisaged that further use of the Y124 and the possible introduction of an additional R-NAV route would relieve longitudinal spacing constraints.	-
DAA	-	DEXEN SID	It is important to improve access into military airspace in the UK, which in Dublin Airport's case would allow more use of the DEXEN SID, again alleviating demand via LIFFY, and providing users with more efficient routes, particularly to the London TMA.	In the context of the Flexible Use of Airspace (FUA), the use of DEXEN for London Heathrow traffic from Dublin continues to be a subject for discussion at UK-Ireland FAB Governance level.	-

CAAPS	-	Cost efficiency/ Pensions - pass through	Concerned by the proposal to limit the pension pass through to 80% of 'down side' scenario as this must lead to a weakening of the Trustee's assessment of the strength of NERL covenant that would inevitably require the Trustee to increase the level of prudence within the scheme which would in turn feed directly through to higher contribution levels.	Addressed in the supporting document.	Chapter 6, para 6.33-6.50
CAAPS	-	Cost efficiency/ Pensions	NERL has already taken significant actions to control pension costs and that the burden of doing so has fallen almost exclusively on the active membership of the scheme (deferred members and pensioners being subject to various protections). Caps on pensionable pay and the replacement of RPI with CPI for future indexation have significantly reduced the value of benefits that members can expect in the future. It is clear that the transfer of economic benefit is from the members of the pension scheme through the NERL charge payers into the hands of charge payer stakeholders and customers. Based on this experience, the Trustee believes that the evidence strongly indicates that NERL needs no further incentive to control pension costs.	Addressed in supporting document.	Chapter 6 para 6.33-6.50

CAAPS	-	Cost efficiency/ Pensions	In addition to the risk attaching to the employer's covenant and the investment risk, the assessment of two further sources of risk both arising out of the liabilities are key in the Trustee's approach to risk management. The first of these is the risk associated with changes in demographic factors particularly longevity risk and the second is the exposure to rate risk through the discount rate but even more importantly through inflation which is an integral component of the liability structure.	Addressed in supporting document.	Chapter 6 para 6.33-6.50
GATCO	3 (question 1)	Safety/ Just Culture	A documented and consistent policy on Just Culture across borders is the only way to ensure that levels of safety reporting are coherent to both regulators and that trends can be analysed effectively.	Noted.	-
GATCO	3 (question 2)	Safety/ Just Culture	The model that has been chosen from Prof. James Reason is well documented, although outdated. The CAA/ IAA could use this opportunity to break new ground in the analysis of determining the culpability of unsafe acts.	The decision tree is only used as an example; NSAs maintain view that it suits the policy statement.	-
GATCO	3 (question 3)	Safety/ Just Culture	Just Culture should be a concept that is not only restricted to the "direct operational" staff. In order for any real "culture"	Just Culture training is set out in relation to the ATM Performance Regulation in this Performance Plan and as such focuses on	Chapter 3

			to exist within an organisation it should be applied throughout that whole organisation. Just Culture only applied to one part of a business will inevitably create divisions within that business and a lack of understanding. A unified Just Culture would ensure that everyone is treated in the same unilateral manner.	the ATM environment and associated staff. However, it is accepted that this constitutes only part of the NSA and ANSP workforce where Just culture also plays a part. The NSAs are firm in our belief that fostering a just culture environment is essential to the effective operation of successful safety management systems where open reporting is the norm. One of the key enablers to achieve this is to create a common understanding through Just Culture training and discussion with participation by all personnel in the entity. It is policy that there must be a formalised approach to training on Just Culture, both for NSA and ANSP personnel. Such training must be inclusive of personnel at all accountability levels including top management. Both NSAs monitor the completeness and effectiveness of Just Culture training.	
GATCO	4 (question 1)	Capacity/ C1	GATCO generally supports the capacity targets as outlined. General caution should be exercised so that these optimistic targets do	Noted.	-

			not become a primary focus for an ANSP with safety trending into a second place.		
GATCO	4 (question 2)	Capacity/ C2	We consider that the scope and function of this mechanism to be appropriate. A delicate balance must always be trod, and providing that this mechanism develops a common RP1 theme, then it will be successful.	Noted.	-
GATCO	4 (question 3)	Capacity/ C4	A metric that promotes resilience in systems, and therefore enhances overall safety, is to be encouraged. Any penalties enforced may have a detrimental effect on that ANSP's ability to provide additional capacity.	Noted. The CAA does not consider that any penalties enforced would in practice have a detrimental effect on NERL's ability to provide additional capacity.	-
GATCO	4 (question 4)	Capacity/ C3 and C4	A true implementation of the existing concept of an FAB (a concept that we do not agree will be successful throughout Europe) would mean that there should be no specific UK only targets	The NSAs are satisfied that the rationale for setting targets at both a FAB and State level is in compliance with the Regulations.	-
GATCO	5 (question 1)	Environment/ KEA	GATCO is supportive of the adoption of these targets. It would be interesting to note whether the IAA have concerns over the combining of these targets at an FAB level when comparing the London TMA and its lateral operational constraints to those of the Dublin TMA.	The Irish NSA is satisfied that a FAB level target is appropriate.	-
GATCO	5 (question	Environme	The harmonized TA and the introduction of the	Noted. The CAA does not agree that	-

	2)	nt/ TA incentivisation and 3Di	LAMP project will dramatically alter 3Di KPI figures in a positive way and should be encouraged. It should be noted that although NATS' 3Di system is being altered, it would remain different to the way in which other European nations measure their performance in this area. A level playing field will be almost impossible to achieve. To pressure complex projects through the use of penalties to find solutions that are so radically different to the way traffic is managed at present may well be detrimental to their overall outcome and safety.	incentives on the TA project will be detrimental to safety.	
GATCO	5 (question 3)	Environment/ 3Di	33% cap and collar calculation is appropriate.	Noted.	-
GATCO	5 (question 4)	Environment/ 3Di	Proposed deadbands are appropriate.	Noted.	-
GATCO	5 (question 5)	Environment	A true implementation of the existing concept of a FAB would mean that there should be no specific UK only targets.	The NSAs are satisfied that the rationale for setting targets at both a FAB and State level is in compliance with the Regulations.	-
GATCO	6	Cost efficiency/ IDS study on NATS staff costs	IDS evidence is not presented within this consultation document and as such cannot be verified or evaluated.	The report has been published on the CAA website along with all consultants' reports.	http://www.caa.co.uk/docs/5/IDS%20(for%20CAA)%20Staff%20Opex.pdf

					Appendix A
GATCO	6	Cost efficiency/ Staff	GATCO has concerns that if the 10% reduction in ATCO numbers quoted in the document by 2019 are achieved and if the projected (minimum ~8%) increase in traffic is realised, an unhealthy and potentially unsafe trend will emerge with our members working longer hours with more traffic.	See updated text on Interdependencies in Chapter 10	Chapter 10
GATCO	6	Cost efficiency/ Staff	Over the last decades a pronounced stability in employment relations between NATS and its trade unions. The trade unions have made strong indications that further reductions in numbers and benefits may upset this stability. This lack of stability would be detrimental to the FAB as a whole.	Noted.	-
GATCO	8	TANS	GATCO refers to its response to the CAP1157 January 2014 consultation document where RP2 targets are addressed.	Noted	-
GATCO	10	Interdependencies	There seems to be less focus on interdependencies in the draft performance plan. We have highlighted in our response to the EC in the PRB's RP2 target consultation in 2013 our concern over the lack of attention in this area along with those of other stakeholders.	Addressed in the supporting doc. The NSAs are satisfied that the interdependencies considerations have now been adequately addressed.	Chapter 10 paras 10.11-10.15

			The PRB subsequently identified this as an area of concern and requested a study be undertaken. The study highlighted the need for simulations, statistic modelling and probabilistic reasoning. This does not seem to be evident at present in this draft performance plan. GATCO urges for strong leadership and firm independent oversight by the CAA and IAA in this area.		
MAG	-	TANS/ General	Competition should be favoured wherever possible over regulation. This is because regulation is likely to be more costly and represent a backward step in the evolution of a market for terminal air navigation services. At the same time, we recognise that there are currently limited alternatives to NATS. For this reason, we see value in putting in place measures to both encourage the development of a contestable market and provide protection in the interim.	The CAA agrees with MAG and will be looking to take steps to encourage competitive outcomes in the provision of TANS.	Chapter 8 Section 1 Para 8.10 -8.14
MAG	-	TANS/ General	Welcome the CAA's commitment to carrying out work to identify the actions needed to enhance the level of contestability in the market for terminal air navigation services. We	The CAA welcomes MAG's comments and will be looking to take steps to encourage competitive outcomes in the provision of TANS.	Chapter 8 Section 1 Para 8.10 -8.14

			agree that any interim regulatory regime should take care not to frustrate or distort the potential for a contestable market to develop. From our own perspective, there are some positive early signs that the potential for more formal regulation of terminal services is encouraging NATS to adopt a more commercial and responsive approach to contract negotiations.		
MAG	-	TANS/ General	CAA should continue its twin-track approach of encouraging the development of a contestable market and putting in place a clear regulatory framework for terminal services. This framework could be used on a 'step-in' basis in the event that a contestable market does not emerge and contract negotiations fail to produce an acceptable outcome. The existence of this framework will, in itself, reduce the likelihood of it needing to be formally used	Noted. The CAA will continue to review its approach to regulation of TANS within the scope of the legislation.	-
MAG	-	TANS/ General	Overall, we believe the proposed targets are acceptable, but not aspirational. We would like to see more stretching targets.	Noted. The CAA has received challenge on this issue form industry and has reviewed its position.	Chapter 8 Section 4 Para 8.21 - 8.44
MAG	-	TANS/ Capacity	The capacity target for Stansted Airport is somewhat weak at current levels of throughput	Noted. The CAA is aware of potential changes in airspace and where it has been	Chapter 8 Section 4

			(though projected growth should see it becoming more realistic over time). There should be some benefit from LAMP Phase 1a in 2015 (similar to Gatwick); beyond 2019 there will also be major benefits from LAMP Phase 2 and the SESAR Pilot Common Project (PCP). There should also be some encouragement for NATS to support Airports, at no additional cost, to introduce A-CDM and continue with other initiatives such as the Transport System Catapult Project, linked to FAS, to introduce DPI (Departure Planning Information) Messaging to further reduce delay.	able to evaluate a robust impact it has sort to take this into account. However where there is uncertainty and the tower is not responsible for delivery, the CAA has not considered it proportionate to take these into account.	Para 8.21 - 8.44
MAG	-	TANS/ Capacity	The capacity target at Manchester is reasonable when our expected increase in traffic and extended opening hours of Runway 2 are factored in.	Noted.	-
MAG	-	TANS/ Cost efficiency	Concerned that the target may not provide strong enough encouragement to NATS to engage in contract negotiations. As pointed out in earlier submission, a business that has been operating without regulation for a considerable period of time in a market that is not contestable is likely to have accumulated significant inefficiencies and failed to have kept	The CAA recognises the concern but considers employing too stringent a target at this stage would have detrimental implications for the development of competitive conditions.	Chapter 8 Section 5 Para 8.69 - 8.77

			pace with market norms. Therefore there is scope for further efficiencies.		
Trustees of NATS Employee Sharetrust	-	Cost efficiency/ Share Scheme	Considerable dismay at proposal to remove Scheme costs. Disagreement that the net costs of the scheme should be absorbed by shareholders or out of overall staff remuneration allowance.	Noted. See CAA's revised decision on the scheme costs in Chapter 6.	Chapter 6
Trustees of NATS Employee Sharetrust	-	Cost efficiency/ Share Scheme	The CAA is recommending that NATS should be incentivised to end the matching arrangements under the Scheme (buy 1 get 1 free). There is a significant risk that the CAA's proposal to discontinue the allowance for funding will undermine the company's continued commitment to the plan. The cost of share awards made to date cannot be avoided and requires to be financed. For the CAA to decide that commitments already made to employees should be excluded from the regulatory settlement would be totally unacceptable and is not a reasonable position to take. The CAA has not previously indicated a change in approach in this area and trustees have therefore acted in good faith in making commitments to staff through shares awarded under the scheme in RP1 and prior years.	The CAA has reconsidered its position on the costs of redistributing redeemed shares at less their underlying value.	Chapter 6 paras 6.52-6.63

Trustees of NATS Employee Sharetrust	-	Cost efficiency/ Share Scheme	For the CAA to decide that future commitments should be excluded is also unacceptable and is not a reasonable position to take. It also goes against the CAA's commitment not to micro manage a regulated business. The NATS Board has to approve all share awards and, if the CAA decided to deny funding for the share plan, the Board has it within its power to simply put the plan into abeyance and not authorise any further awards. In such circumstances, the effect of a CAA decision to deny funding would have no meaningful impact on the major shareholders or the company but would deprive NATS employees of an important benefit that they were promised by Government when the PPP was established. Trustees are thus concerned that the burden of the CAA's measures will fall solely on staff. This cost is not related to equity, as CAA suggests. Also, we do not believe that undermining long established employee terms and conditions of service in this way will be of benefit to customers.	The CAA has reconsidered its position on the costs of redistributing redeemed shares at less their underlying value.	Chapter 6 paras 6.52-6.63
Trustees of NATS Employee	-	Cost efficiency/ Share	The share plan is operated as a NATS-wide scheme and, while three quarters of NATS staff are within NERL, the other quarter are	Noted. See CAA's revised decision on the scheme costs in Chapter 6.	Chapter 6

Sharetrust		Scheme	employed by NSL in the unregulated business. While NSL staff are outside the scope of the CAA's review, any decision to deny funding to NERL would necessarily lead the NATS Board to review the operation of the scheme as a whole as the trust deed requires all NATS staff to be treated equally. The proposals would therefore impact staff outside the regulated business and this is clearly inappropriate.		

APPENDIX A

ANSP Business Plans

UK

NERL business plan

A1 NERL costs are an important element as they make up about 85% of the UK's Determined Unit Cost (DUC).

A2 In order to develop the UK contribution to the Performance Plan, in its July 2012 consultation document[66], the CAA asked NERL to develop, as part of its draft RP2 business plan, scenarios for DUC reductions of -2%, -3.5% and -5% per year in real terms.

A3 In April 2013 the CAA tasked NATS to provide an initial business plan (IBP) covering the period of RP2 and consult on it with its customers[67]. The CAA considered it appropriate to modify the DUC scenarios to reflect the indicative performance ranges consulted on by the PRB in February 2013, namely -3.2%, -4.1% and -4.6% and -6.9% per year. NERL subsequently issued its IBP for consultation with customers, based on two reference point proposals: Plan 1 and Plan 2. Both offered significant cost savings to customers. However, at high level, Plan 1 offered better service quality and fuel savings while Plan 2 assumed fewer controllers which would imply lower service resilience and lower fuel savings due to slower delivery of key airspace programmes (LAMP and NTCA).

---

66 CAA, A consultation on the CAA's process for developing economic regulation for Reference Period Two under the Single European Sky, July 2012, available from: http://www.caa.co.uk/docs/2460/RP2Process.pdf

67 CAA, The CAA process update for the economic regulation of NERL and contribution to the UK-Ireland FAB Performance Plan for Reference Period 2 (2015-2019) of the Single European Sky Performance Scheme: A mandate for Customer Consultation between NERL and airspace users (CAP 1019), April 2013, available from: http://www.caa.co.uk/docs/33/CAP%201019%20economic%20regulation%20of%20NERL.pdf

A4 On 30th September 2013 the PRB published its advice on EU-wide targets for RP2. The PRB proposed to reduce DUC by -4.6% per year over RP2.

A5 A Customer Consultation Working Group (CCWG) was established. It held three meetings and five workshops and submitted its final report on the IBP to the CAA on 30 September 2013[68].

A6 Taking account of the input from its customers as part of the CCWG process as well as CAA's requirements[69], NATS submitted a Revised Business Plan (RBP) to the CAA on 18 October 2013[70].

A7 The CAA has commissioned several expert consultancy studies to look in detail behind the content of the NATS business plan. Figure 2.1 below lists the independent consultancy studies.

---

68 CCWG, RP2 Customer Consultation Working Group - Report from Co-Chairs, 30 September 2013, available from: http://www.caa.co.uk/docs/5/RP2%20Co-%20chairs'%20Report%20Final%2030%209%202013.pdf

69 CAA, Letter to NERL setting out CAA requirements for NERL RBP, 9 September 2013, available from: http://www.caa.co.uk/docs/5/20130909%20GoodliffeFotherbyRBP%20Final.pdf

70 NATS (En Route) plc, RP2 Revised Business Plan (2015-2019): Revised following Customer Consultation and PRB advice on 27th September to the Commission on EU-wide performance targets, 18 October 2013, available from: http://www.caa.co.uk/docs/5/20131018%20RP2%20Revised%20Business%20Plan%20-%20updated%20for%20PRB%20targets%2018%20Oct%20-%20se....pdf, Appendices: http://www.caa.co.uk/docs/5/20131018%20NATS%20RP2%20Business%20Plan%20Appendices%20-%20updated%20for%20PRB%20targets%2018%20....pdf

Figure A.1: Consultancy studies on NATS business plan

Area covered	Consultants	Final report
Cost allocation	Cambridge Economic Policy Associates Ltd and BDO LLP	NATS cost allocation: Final report http://www.caa.co.uk/docs/5/CAA%20NATS%20Cost%20allocation%20final%20(redacted)1%20post%20stakeholder%20comments.pdf
Capital expenditure (capex)	ARUP and Helios	NERL RP2 Capex Review: phase 1 report http://www.caa.co.uk/docs/5/20140106_CAA_NERL_capex_Arup_report%20v%202%201%20REDACTS.pdf
Staff operational expenditure (opex)	Thomson Reuters (Incomes Data Service)	Assessing the efficiency of NERL's total employment costs in RP2 http://www.caa.co.uk/docs/5/IDS%20(for%20CAA)%20Staff%20Opex.pdf
Non-staff opex	Capita Symonds	NERL Non-Staff Opex Review www.caa.co.uk/default.aspx?catid=5&pagetype=90&pageid=15836
Pensions	Government Actuary's Department	RP2 price control review for NATS (En Route) plc: Analysis of pension costs www.caa.co.uk/default.aspx?catid=5&pagetype=90&pageid=15837
Cost of capital	PricewaterhouseCoopers	Estimating the cost of capital for NERL www.caa.co.uk/default.aspx?catid=5&pagetype=90&pageid=15838

Source: CAA

A8 NATS revision of the business plan and the CAA's assessment are discussed in the Chapter 6 below on cost efficiency.

Ireland

IAA ANSP Business Plan

A9 The final version of the Business Plan of the IAA ANSP was provided to the NSA in January 2014, following a process of coordination to ensure all necessary information was included in the BP, as well as sufficient clarification to create a view of the ANSP's intentions for the coming years.

A10 The ANSP Business Plan was supported by an external study on the level of cost of capital, performed by First Economics.

Met Éireann Business Plan

A11 Similar to the IAA ANSP Business Plan, Met Eireann's Business Plan was provided to the NSA following a process of coordination, including challenges on initial proposals, to ensure the plans are clear and associated costs are justified.

APPENDIX B

Just Culture Policy

Just Culture

B1 Commission Implementing Regulation (EU) 390/2013 (the Performance Regulation) promulgates in Article 2 the following definition of Just Culture:

B2 '*just culture*' means a culture in which front line operators or others are not punished for actions, omissions or decisions taken by them that are commensurate with their experience and training, but where gross negligence, wilful violations and destructive acts are not tolerated.

B3 The National Supervisory Authorities for the UK-Ireland Functional Airspace Block (FAB) jointly promote this Just Culture definition as a guiding principle in relation to both operational and supervisory activities in the FAB. Both States recognise and espouse the value of Just Culture in providing a safe operating environment, and in helping to underpin the goal of continuous improvement in flight safety.

Confidentiality of Reports and Information

B4 It is fundamental to the purpose of the reporting of incidents and accidents that the knowledge gained from the investigation of these occurrences is disseminated so that we may all learn from them.

B5 Without prejudice to the proper discharge of their responsibilities, the FAB National Supervisory Authorities (the UK CAA and the IAA SRD) will not disclose the name of the person submitting the report, or of the person to whom it relates, unless required to do so by law; or the person concerned authorises disclosure.

B6 Should any safety follow-up action arising from a report be necessary, the NSAs will take all reasonable steps, in accordance with their national law, to avoid disclosing the identity of the reporter or of those individuals involved in any reportable occurrence.

Assurance Regarding Prosecution

B7 The NSAs give an assurance that their primary concern in relation to the reporting of incidents and accidents is to secure free and

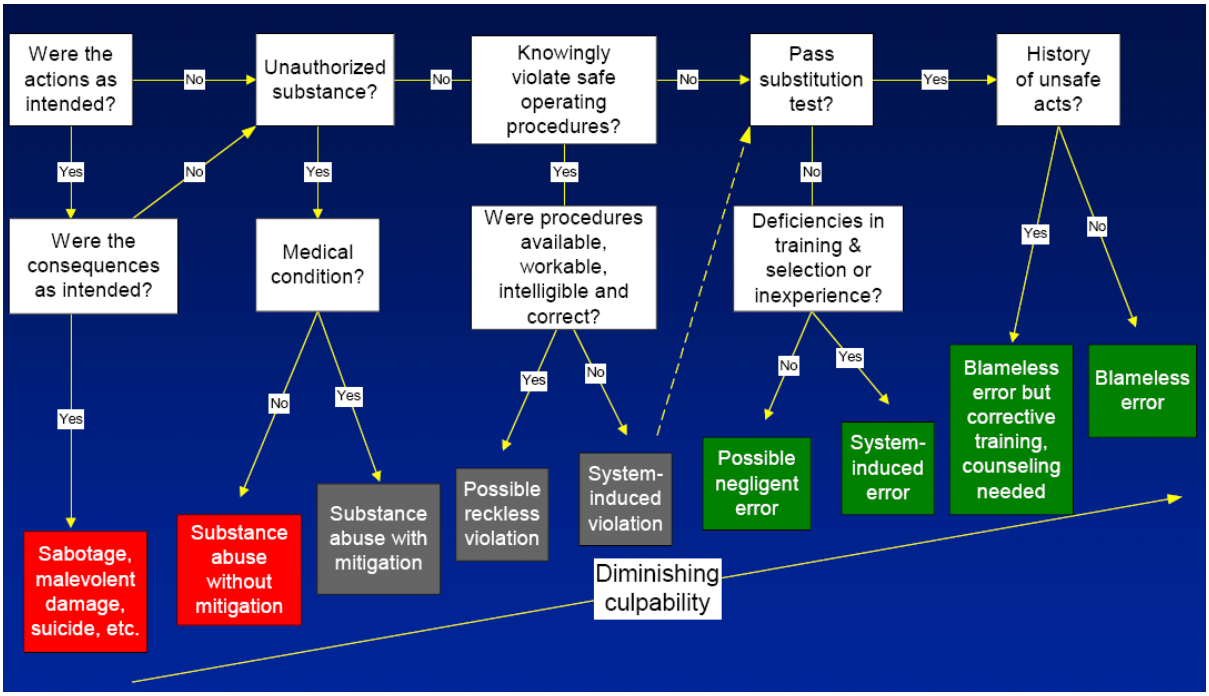
uninhibited reporting. Therefore, and without prejudice to the applicable rules of criminal law, proceedings shall not be instituted in any case of an unpremeditated or inadvertent contravention of the law which comes to the attention of the NSAs or their respective States only because it is the subject of a report under their mandatory occurrence-reporting schemes, except where such case is one of gross negligence.

B8 It must be noted that it is an offence if a person who is required to report an occurrence does not do so, or if a person knowingly or recklessly makes a report or gives further information which is false or misleading.

Treatment of an incident or investigation in a Just Culture environment

B9 Investigation and analysis of an incident/occurrence shall be assessed in the framework of a Just Culture. There are a number of examples of such a framework and the process outlined below is taken from James Reason ('Managing the Risks of Organisational Accidents' - A decision tree for determining the culpability of unsafe acts' p209, 1997, Ashgate Publications).

Figure B.1: Decision tree for determining the culpability of unsafe acts



Source: 'Managing the Risks of Organisational Accidents' - A decision tree for determining the culpability of

unsafe acts' p209, 1997, Ashgate Publications

Possible Action by Employers

B10 Where a reported occurrence indicates an unpremeditated or inadvertent lapse by an employee, the UK-Ireland NSAs would expect the employer in question to act responsibly, to share the view that free and full reporting is the primary aim, and ensure that every effort should be made to avoid action that may inhibit reporting. The NSAs accordingly makes it known to employers that, except to the extent that action is needed in order to ensure safety, and except in such flagrant circumstances as are described above, it expects them to refrain from disciplinary or punitive action which might inhibit their staff from duly reporting incidents of which they may have knowledge.

B11 Article 8(4) of the European Occurrence Reporting Directive (2003/42 EC) requires Member States to ensure that employees who report incidents of which they may have knowledge are not subjected to any prejudice by their employer. An employer shall not subject an employee of the employer to any prejudice because the employee has, for the purposes of these Regulations, made a report of an incident of which the employee may have knowledge. It further expands this statement by stating an employee is subjected to prejudice if the employee:

- is dismissed or suffers any unfavourable change to the employee's conditions of employment or any unfair treatment (including selection for redundancy); or
- is the subject of any other action prejudicial to the employee's employment.

Action in Respect of Licences

B12 The NSAs have a duty to vary, revoke or suspend a licence as appropriate if they cease to be satisfied that the holder of the licence is competent, medically fit and a fit person to exercise the privileges of the licence. If an occurrence investigation report suggests that the licence holder does not satisfy any of these requirements, the NSAs will take appropriate licensing action. For example, if the report indicates that the licence holder requires further training, the NSAs may suspend his licence until he has undergone such training. If a report should indicate that the licence holder may not be a fit person to exercise the privileges of his licence, the fact that he has reported

the occurrence will be taken into account by the licensing authority in determining appropriate action, if any. Although the NSAs recognise that, in practice, licensing action may be regarded as having a punitive effect there can be no question of action being taken by the NSAs on a licence as a punitive measure. The purpose of licence action is solely to ensure safety and not to penalise the licence holder. In all such cases, when considering what action to take, the NSAs will take into account all relevant information which is available to it about the circumstances of the occurrence and about the licence holder.

Protection of the Interests of the Licence, Approval or Certificate Holder

B13 Where the NSAs propose to take action against a licence, approval or certificate, the holder is entitled to have that proposal reviewed in accordance with national laws. At any such hearing, the holder may be legally represented and may be assisted or accompanied by anyone he wishes.

B14 Where a licence holder is a member of an association or trade union he is at liberty to inform that association or union of any prosecution or action by the either of the NSAs in respect of his licence, and seek their assistance.

Ireland and UK Legislation

B15 The principles above have always been central to the investigation of air safety occurrences and greatly influence the success of such programmes. As a result of EU Directive 2003/42, many of these principles are captured in UK law through the Air Navigation Order 2009 (Article 226 refers) and in Irish law through SI 285/2007.

ANSP - Just Culture

B16 The FAB ANSPs are exhorted to take note of this Just Culture Policy Approach and to incorporate equivalent principles within their respective ANSP documentation, activities and processes.

B17 The FAB ANSPs, recognising the integral architecture of Safety Management Systems and Just Culture, are encouraged to ensure that their organisation is structured in such a way as to provide assurance on the implementation of Just Culture principles.

Just Culture Promotion

B18 Fostering a just culture environment is essential to the effective operation of successful safety management systems where open reporting is the norm. One of the key enablers to achieve this is to create a common understanding through Just Culture training and discussion with participation by all personnel in the entity.

B19 It is policy that there must be a formalised approach to training on Just Culture, both for NSA and ANSP personnel. Such training must be inclusive of personnel at all accountability levels including top management. Both NSAs monitor the completeness and effectiveness of Just Culture training.

Just Culture Policy Review

B20 Currently EU Directive 2003/42 is under review and will be repealed when the Regulation on Occurrence Reporting comes into force. This Policy statement will be reviewed at that time to ensure consistency with the Regulation.

APPENDIX C

Description of UK Additional Capacity Performance Targets & Incentives

Summary

C1 The additional incentives for the UK proposed for RP2 are largely based on a structure of performance measures in place for RP1 which had been agreed NERL and users. This structure consists of two elements:

- C3 – Impact of individual delays: expressed as an "Impact Score" (placing greater weight on long delays and operationally critical departures in the morning and, to a lesser extent, the evening peak) weighted[71];
- C4 – Variability of daily average delays: expressed as a "Daily Excess Delay Score" based on weighted delays exceeding pre-determined thresholds on a daily basis.

C3: Impact Score

C2 The C3 "impact score" is derived by weighting ATFM delay by the weights set out in Figure C.1.

Figure C.1: Weighting of delay to derive C3 impact score

	Morning Peak Period	Evening Peak Period	Other times
Delay > 0 and <= 15 minutes	3	2	1
Delay > 15 and <= 30 minutes	6	3	2
Delay > 30 and <= 60 minutes	9	6	3
Delay > 60 minutes	18	9	6

Source: CAA

[71] These weightings were agreed by NERL and its airline customers through the customer consultation process prior to RP1.

C3 For example if a flight in the period defined as the morning peak had a relevant delay of 65 minutes its impact score would be as described in Figure C.2.

Figure C.2: C3 incentive - worked example

	Seconds	Weight	Weighted impact score components
Delay > 0 and <= 15 minutes	15 X 60	3	2700
Delay > 15 and <= 30 minutes	15 X 60	6	5400
Delay > 30 and <= 60 minutes	30 x 60	9	16200
Delay > 60 minutes	5 X 60	18	5400
Total			29700

Source: CAA

- "Morning Peak" means flights with an off-block estimated time between 0400 and 0800 UTC in Summer (April –October inclusive) and between 0500 and 0900 UTC in Winter (January – March inclusive and November-December inclusive).
- "Evening Peak" means flights with an off-block estimated time between 1500 and 1900 UTC in Summer (April –October inclusive) and between 1600 and 2000 UTC in Winter (January-March inclusive and November-December inclusive).

The thresholds at which penalties and bonuses would be paid

C4 Subject to modulation for variances in traffic, the CAA proposes that for each relevant year:

- A penalty should be paid for performance below an equivalent level of performance to the KPI target for C1;
- A bonus should be paid for performance above an equivalent level of performance to the best performance cited in the revised business plan.

C5 In each case the values need to be adjusted::

- for the penalty threshold to reflect that the KPI target for C1 includes an element of delay which is not attributable to NERL; and

- for the bonus threshold, to reflect the difference in measurement between the enhanced NERL approach (on which the target in the RBP were based) and raw CFMU data on which the bonuses (and penalties) will be based.

C6 As the impact score for C3 has typically been some 2.2 times the score for the same performance for the unweighted NERL attributable delay, the threshold scores have been uplifted by this factor.

C7 In its response to the draft Performance Plan NATS argued that CAA used data for a limited time period to derive the ratio of the C3 target and thresholds relative to their C2 counterparts. In so doing, the CAA is proposing a C3:C2 ratio of 2.2. NERL's own analysis of the 2010-2013 data suggested that the C3:C2 ratio should be 2.4.

C8 The CAA had formed its view of the appropriate ratio based on the data that NERL issued in its performance reports to users for the period 2011- September 2013.

Period	Ratio weighted to unweighted metric
2011	2.27
2012 (Non Olympic Period)	2.14
2012 (Olympic Period)	2.03
2013 (Jan-Sept)	2.21
Mean Excluding Olympic Period	2.21

C9

C10 The NERL approach would add performance in 2010 and the final quarter of 2013. The CAA is not persuaded that including data for 2010 (a period before the start of this particular weighting of delay in the incentive scheme) or the last quarter of 2013 (which included the extraordinary effect of December 7) would provide a better estimate of an appropriate factor to be applied. The CAA has decided to confirm the 2.2 factor used in the draft Performance Plan.

C11 The derivation of the threshold for penalties has been modified to take account of the revised threshold for C2 penalties due to the revision of FAB reference values. This reduces the threshold for penalties from 27 in the draft plan to 24.

Figure C.3: Derivation of the Threshold of Penalties and Bonus

	Penalty	Bonus	Note
Base source	KPI target for C1	Best performance cited in RBP	
Base	0.230	0.100	
Non NERL attributable in base	-0.05	n/a	
C3 calibrated in seconds	X 60	X 60	
Different basis of measurement	n/a	X 1.2	The RBP assumes a metric based on NERL adjusted data whereas metric is on raw CFMU basis.
Transform delay to impact score	X 2.2	X 2.2	Based on past observation
Threshold for penalty or bonus	24	16	

Source: CAA Calculation

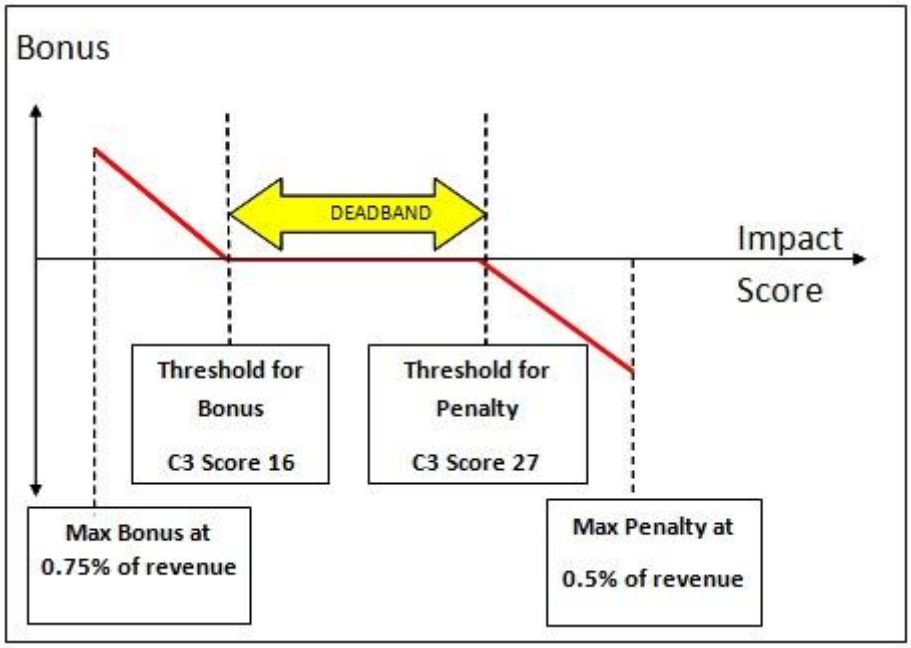
Figure C.4: The rate of penalties and bonuses

	2012 Prices
Bonus per point per flight	£0.112
Penalty per point per flight	-£0.112

Source: CAA calculation

C12 The values have been calibrated to allow a maximum bonus of 0.75% of the DC for 2015 at the forecast number of flights. The rates above are stated in 2012 prices. It is proposed that these rates will be uplifted from 2012 prices for each relevant year by the Harmonised Index of Consumer Prices (HICP) index in line with other elements of charges.

Figure C.5: C3 diagram



Source: CAA

Modulating the capacity target for significant unplanned changes in traffic

C13 Consistent with the approach in RP1, the par values for C3 in the incentive mechanism will be modulated in the event of unexpectedly high or low levels of traffic. If traffic were more than 4% higher than what was projected for the year then the thresholds at which penalties or bonuses would apply would be increased. Conversely, if the traffic were more than 4% lower than what would be projected then the thresholds at which penalties or bonuses would be paid would be tightened so that bonuses were not being granted to NERL due to spare capacity rather than real performance improvements.

C14 The rate of modulation of the thresholds for bonuses and penalties in excess of ±4% will remain the same for C3 in RP2 as in RP1. This was an elasticity of 5. For example if the traffic growth in a particular year was 7% higher than forecast, the thresholds for penalties or bonuses would be (7%-4%) x 5 = 15% higher than at expected levels of growth.

C4 - Daily Excess Delay Score

Weighting

C15 The C4 Daily "Excess Delay Score" is derived by weighting ATFM delay by the weights set out in Figure C.6. Delay below the lower threshold is weighted as zero.

Figure C.6: Weighting of delay to derive excess delay score - weightings

Season	Daily delay thresholds (average delay per flight)		Weighting
Winter	Lower Threshold	40 seconds	1
	Upper Threshold	80 seconds	2
Summer	Lower Threshold	60 seconds	1
	Upper Threshold	110 seconds	2

Source: CAA

The thresholds at which penalties are paid

C16 In the draft Performance Plan, the Threshold for the payment of penalties was proposed to be set at 1650 - the same level as RP1. (This reflected that there did not appear to be robust basis of analysis for very rare events.)

C17 NATS has argued in its response to the draft Performance plan that the threshold for penalties should be increased by 20% to reflect the difference between the RP1 and RP2 basis of measurement.

C18 The CAA recognises that in changing the basis of measurement it is reasonable to make the same adjustment for C4 as it has made for C3 and has therefore decided to increase the threshold for penalties to 2000.[72]

Figure C.7: The rate of penalties

	2012 Prices[73]
Penalty	-0.0008025

[72] This is equivalent to 1650 x 1.2 rounded to the nearest 50 points.

[73] This rate has been indexed from 2006 values to 2012 prices using the RPI index as applied in the current licence.

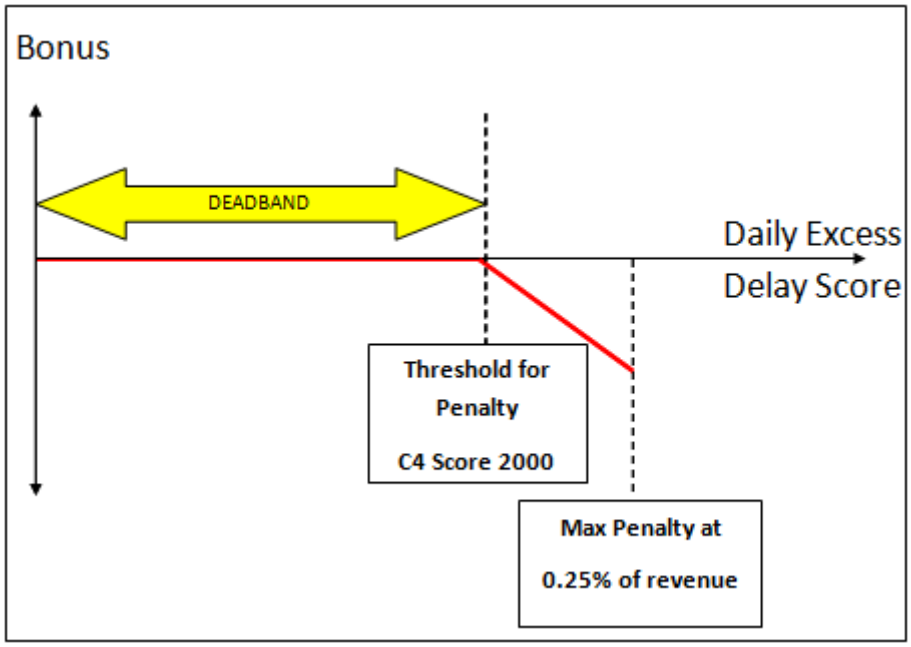
Source: CAA

C19 The rates above are stated in 2012 prices. It is proposed that these rates will be uplifted from 2012 prices for each relevant year by the HICP index in line with other elements of charges.

C20 In its response to the draft Performance Plan NATS argued that the rate of penalty should be reduced by a factor of about 0.7 so that the maximum penalty would be paid at the level that applies in RP1 to ensure that the maximum penalty was not used up by one major incident and to mitigate any perverse incentive on NERL to increase the extent of capacity regulations to promote cancellation rather than delay.

C21 The CAA is not persuaded by this argument that it should reduce the rate of penalty on the C4 metric. The CAA considers that NERL is obliged to supply under Condition 2 of its licence and the potential consequences of a licence breach should be sufficient to stop NERL from pursuing such a course. In addition it would provide the wrong message to NERL and its users to reduce the rate of penalties to based on such an argument following on from the experience of 7 December 2013.

Figure C.8: C4 diagram



Source: CAA

C22 The level of penalties for the relevant year will be limited to 0.25% of revenue.

Modulating the capacity target for significant unplanned changes in traffic

C23 It is not proposed to modulate the C4 measure for variations in traffic during RP2. (This represents a modification from RP1). This modification is intended to reflect the fact that C4 is not based on the underlying headroom between capacity and traffic but on some rare system failure. It should therefore be relatively independent of traffic.

APPENDIX D

UK cost efficiency: NERL's pensions cost

D1 Pensions, and in particular defined benefit (DB) pensions, represent a significant portion of NERL's staff costs. It is also an issue that users have drawn particular attention to in their Specific Interests Paper.

D2 The nature of a DB pension is that it creates a liability to pay benefits, the ultimate costs of which are unknown, and can only be estimated at any point of time based on assumptions such as expected longevity, investment returns and future increases in pensionable pay. These assumptions are subject to significant change and the very long lags in time before pension liabilities finally crystallise, means that relatively small changes in assumptions can lead to very significant changes in valuation between points in time. UK legislation requires actuarial valuations of pension schemes to be made on the basis of prudent assumptions on a regular basis (usually every three years) and this forms the basis of the contribution rates going forward. Contributions are made up of a standard contribution to cover the expected costs of benefits accruing to active members (from being employed for that period) and where there is a deficit in the valuation of the scheme, an element to allow for that deficit to be closed subject to a deficit repair plan agreed with the Trustees.

D3 The benefits for existing members in the DB scheme are subject to very strong legal protections put in place at the time that NATS was transferred from 100% Government ownership to a Public Private Partnership (PPP). The restriction on the Scheme's amendment power broadly prevents an amendment being made to reduce or stop the future accrual of benefits in the Scheme. This prevents many of the steps that other schemes taken to reduce liabilities such as closing the scheme to future accrual or reducing benefits through negotiation with employees or otherwise.

D4 NATS has managed to achieve considerable changes to the scheme within this legal framework, at the margin where it has some discretion, through negotiation with the trades unions.

D5 Prior to 2009, in common with the experience of many other companies across the UK, the cost of providing DB pensions rose dramatically as a result of lower real investment returns and increasing life expectancy. In 2009 the company reformed its pension arrangements as a response to these developments.

- The DB scheme was closed to new members in April 2009 and from that date new employees have been able to join a new, and significantly lower-cost, defined contribution scheme.
- The rate of increase in pensionable pay for members in the DB scheme was capped at RPI+0.5% pa. (The amount of pensionable pay would however be adjusted in the case of promotion).
- A tax-efficient salary sacrifice structure was introduced to save employer national insurance on employees' pension contributions.

D6 The triennial valuation of the NATS pension scheme carried out as at 31 December 2009 reported a deficit in the NATS scheme of £351 million. This resulted in current employer pension contribution of c.46%: of staff salaries comprising c.37% for the standard contribution and deficit contributions under an 11-year recovery plan ending April 2021 of about £20 million p.a.

D7 The latest triennial valuation was performed as at 31 December 2012. If this had been based on the 2009 valuation methodology (as set out in the Trustees' Statement of Funding Principles as agreed as part of that valuation), the scheme's actuary determined that the funding deficit would have increased to £949 million as at 31 December 2012. (NERL's share of this deficit for the NATS group scheme would have been c. £750 million.)

D8 NATS recognised that a funding deficit on this scale would be unacceptable as it would have implied an increase in contribution from c 46% to 81% at the beginning of RP2. It therefore developed a mitigation plan to include:

- a re-negotiation with trades unions of a reduction to the cap on the increase in pensionable pay introduced in 2009 for members in the DB scheme from RPI +0.5% to CPI+0.25%; and

- a recommendation from the company, supported by its trades unions, that the indexation of future service benefits be linked to CPI instead of RPI. Agreeing various amendments to assumptions with the trustees resulting in a reduction in the funding deficit and to lower cash contributions during the RP2 period.

D9 These actions mitigated the increase in the expected deficit between the two valuation dates from £650 million to £31 million and allowed the deficit repair component of the contribution to remain relatively constant between RP1 and RP2. More significantly, these changes allowed the standard contribution rate to decrease from 36.7% currently to 29.4% of pay from January 2015.

D10 Taking these amounts for members in the DB scheme together with lower rates for members of the defined contribution scheme allows NERL's overall contribution rate to decrease from 43% of pensionable pay in 2013/14 to 36% in 2015/16 and then remain broadly constant as a percentage of pay to 2019/20.

D11 The CAA acknowledges users' concerns that pension costs represent a much higher percentage of salaries than is typical in companies with similar schemes or in their own companies. Notwithstanding the significant steps that NATS has taken to mitigate its liabilities and future contributions, the CAA has taken expert advice on:

- whether NERL's stewardship of the scheme in conjunction with the Trustees for the period 2011 – 2013 meets all current legal requirements without unreasonable cost or cash contributions from NERL;
- whether the valuations that had been adopted in estimating the pension contribution for 2015 – 2019 are reasonable; and
- whether NATS has done all it can to mitigate future liabilities under the scheme within the legal constraints upon it.

D12 On the first two points the consultants have advised that the assumptions used for the valuation are within a reasonable range and that the Trustees' stewardship report does not give any reasons for concern.

D13 As the age profile of members is relatively immature, the Trustees have been able hitherto to take a relatively long term view to

investment with a greater weighting of investment in return-seeking assets rather than more conservative low yielding bonds to match income with liabilities. This would normally be expected to lower the cost of the scheme to NATS and users (for example it is expected that one-third of the deficit will be closed by excess returns during the recovery period). In this context, it should be noted that the Trustees are currently considering whether they should make changes to the investment policy going forward which would de-risk the scheme by putting greater emphasis on low yielding assets which match liabilities rather than return seeking assets. Such a change would reduce the volatility in the valuations in the scheme but would increase the expected cost of the scheme, at least if, as would normally be expected, return seeking assets make greater returns than low-risk assets like bonds over the long run.

D14 This risk-return trade-off is, of course, important for users as under the current regulatory arrangements, contributions are effectively a pass through item. The CAA will therefore seek to ensure that this is considered when any change in investment policy is considered.

D15 On the third point the advice has been that the restriction on the Scheme's amendment power broadly prevents an amendment to the Scheme's rules being made to reduce or stop the future accrual of benefits in the Scheme for the pre-existing members of the scheme. It has however identified a number of liability management options that are still legally possible (or which might arguably be possible).

- The further reduction in the portion of remuneration considered as pensionable pay (e.g. removing certain allowances or pay increments on promotion) This is a measure which is within NERL's remit, given that the resulting scheme continues to perform the intention of proving a defined benefit pension based on final salary. Moreover, NATS has already pursued this line through capping pay twice already: the last time as late as 2013.
- Increasing the employee contribution. (The CAA has received its legal advice, which is uncertain on the issue and suggests that more analysis is needed; NATS has previously conducted its own further analysis through a QC's legal opinion, to the effect that increasing employee contributions will be interpreted by a Court as reducing employee benefits.)

- A number of more minor areas to maintain challenge on the administration of the scheme

D16 The CAA considers that NATS has made considerable steps to mitigate its future pension liabilities. The CAA as regulator stands behind the NERL's covenant to honour its eventual pension commitments but it considers that NERL should continue to have an incentive to mitigate liabilities and the future contributions which ultimately come from users. In any future consultations with the Trustees on investment policy it should have an incentive to respond in the same way that an employer in a competitive sector that did not have a regulatory pass through would behave.

D17 The CAA therefore proposes to adjust the approach that it takes to the provisions of the charging regulations which allow variances in costs to be logged up and passed through in the subsequent reference period. It is not inclined to reduce the amounts to be credited to users if the value of the scheme were to improve because of changes in market factors in RP2: this is because users have borne the brunt of the deterioration in values in recent years and to do so would appear unfair should market fundamentals return to more normal long term levels. The CAA does however consider that it is not unreasonable for NERL to bear some of the cost risk of pensions so that it behaves in a way that companies would in more competitive markets. CAA therefore proposes:

- passing through 80% of the difference between actual contributions and contributions assumed as part of the DCs when the actual contributions are greater than the assumed contributions; and
- passing through 100% of the difference when the actual contributions are less than the assumed contributions.

D18 The CAA also proposes that the contributions assumed for 2018 and 2019 should be reduced by a further 10%. These two years are after the next valuation of the scheme and so the level of contribution is more uncertain. Should the contributions required be higher than these revised allowances, then NERL would be able to subsequently recover 80% of the shortfall in subsequent reference periods. NERL would nevertheless have a relatively small amount at stake to encourage it to lean against any cost pressures.

Figure D.1: Proposed Amendment to RBP for DB Pensions[74]

	2015	2016	2017	2018	2019	Total
RBP*	75.0	74.8	75.2	75.3	73.6	374.0
Draft PP*	74.7	74.3	74.3	68.9	65.4	357.5
Difference	-0.3	-0.6	-1.0	-6.4	-8.2	-16.5

Source: NERL RBP and CAA analysis

* In both cases the overall values show the combined pension costs of DB and DC pensions.

[74] This includes both the direct effect of the adjustment in defined pensions and the additional effect of the change in staff costs.

APPENDIX E

UK cost efficiency: Cost of capital for NERL

E1 The RBP adopted a working assumption for the headline cost of capital of 7% (pre-tax real). This was based on advice NERL commissioned from Oxera[75]. In the calculation of allowed returns, NERL used the accounting rate of return (ARR) of 6.76%.[76].

Figure E.1: Oxera's estimate of the WACC

Percent	Low	High
Gearing	60	60
Pre-tax cost of debt	2.5	2.7
Total Market returns	6.50	7.25
Risk-free rate	1.50	1.75
Equity risk premium	5.00	5.50
Equity beta (number)	1.35	1.35
Post-tax cost of equity	8.3	9.2
Vanilla WACC77	4.8	5.3
Pre-tax WACC	6.7	7.3

Source: Oxera Report

E2 In setting out its requirements prior to NERL preparing its RBP, the CAA stated[78]:

75 "What is the cost of capital for NATS (En Route) plc for RP2?" - Oxera, 24 July 2013.

76 The accounting rate of return (ARR) is a concept that recognises that within a year returns can be reinvested, and therefore to earn the WACC by the end of the year, a lower cost of capital, the ARR, should be applied to the RAB. The ARR was used in previous control periods and is used in other, but not all, regulated sectors.

77 The vanilla WACC is the weighted average of the pre-tax cost of debt and the post-tax cost of equity.

78 Letter to Finance Director NATS 9 September 2013 published at: http://www.caa.co.uk/default.aspx?catid=5&pagetype=90&pageid=585

- "The CAA has not yet reached a view on the appropriate cost of capital for RP2 and does not endorse any value at this stage in the process. The CAA expects to consider the advice of its own consultants and any emerging evidence from European Commission advisers before it drafts the UK element of the relevant performance plan."

E3 In response to the draft PP, NERL revised its proposed real vanilla WACC from 4.9% in the RBP to be no less than 4.7% (on an accounting rate of return basis). NERL considered that this acknowledged the recent airport regulatory decisions in relation to market conditions and reduced NERL's cost of capital allowance by approximately £15m in RP2 relative to the RBP. NERL considered the CAA had not provided sufficient evidence for the remainder of its proposed reductions. NERL's real vanilla WACC proposal of 4.7% equated to a pre-tax WACC of 6.5%.

E4 The airlines considered that the WACC should be closer to 5% than the CAA's initial assessment of 5.75%.

E5 The CAA commissioned PwC to advise on the appropriate cost of capital for NERL for RP2. The Additional Information Annex to the PP in EU template sets out the CAA's cost of capital assumption for RP2 (See Annex C to PP template).

Gearing

E6 PwC advised, and the CAA agrees that the appropriate notional gearing level for the RP2 WACC is 60%. This is the same as RP1 and that proposed by Oxera.

E7 The airlines thought that 60% was too conservative and, that during the recent downturn, NERL had few if any issues based on its current gearing and risk position. The airlines concluded that if systematic risk remained unchanged then gearing levels up to a cap of 75% would appear to be acceptable.

E8 The choice of gearing is a matter of judgement. For RP1 the CAA undertook extensive analysis which led to the introduction of a licence condition which placed a limit on the level of gearing. The choice of gearing used in the WACC (60%) and the cap (65%) was based on NERL's ability to withstand a shock which led to a temporary increase in gearing, but still be able to access the debt markets at reasonable

rates (i.e. maintain an investment grade credit rating). The CAA's RP1 analysis showed that while at gearing of c 70-75% NERL might be able to maintain an investment grade rating, it may not be able to absorb shocks of the magnitude seen since PPP. The CAA continues to consider that the appropriate gearing to be used in the WACC is 60%.

Cost of debt

E9 Oxera estimated that the cost of debt was in the range 2.5% to 2.7%. This was estimated based on combining the cost of existing debt (2.4%) and the cost of new debt (2.4% to 3%) using the weighting 80:20. Transaction costs of 10 to 20bps were also included.

E10 NERL's bonds currently have a rating of AA- from Standard &Poor's (S&P) and A2 from Moody's (a difference of two 'notches'). S&P rate the underlying business at A and Moody's at A3, and uplift that rating to reflect the perceived effect of NERL being a 'Government-related issuer'. The uplift by S&P is two notches and by Moody's is one notch.

E11 In previous control periods the CAA has not made any explicit adjustment for the provision of this government support (as perceived by the credit rating agencies). PwC recommends that for RP2, the CAA incorporates the benefit of government support into the cost of capital assessment, because this would lead to lower charges, rewards investors fairly while still allowing the CAA to fulfil its financing duty.

E12 PwC estimated the cost of debt by assessing market data on NERL's bond and benchmark indices. PwC estimated the cost of existing debt to be 2.5% for RP2 based on the yield to maturity of NERL's bond at issuance.

E13 PwC estimated the cost of new debt over RP2 to be 1.5% to 2% based on combining evidence on benchmark indices and yields on NERL's bond.

E14 These costs are combined in the ratio of 80% existing debt and 20% new debt, reflecting the relatively small financing needs over RP2. Consistent with the CAA's final views on Gatwick PwC added fees of 10bps to the cost of debt and calculated that the appropriate range is 2.4% to 2.5%.

E15 The CAA initially chose the midpoint of this range (2.45%) in its calculation of the WACC. This was below RP1 estimate (3.6%) because market rates have fallen and PwC assumed a higher credit rating assumption compared to RP1.

E16 Oxera considered that the CAA's choice of the cost of debt was based on selective market evidence and, as a result, understated the cost of debt for RP2.

E17 First, Oxera noted that PwC proposed to use NERL's actual credit rating (which includes an uplift to reflect the possibility of government support) as the target credit rating to estimate the cost of new debt. Oxera observed that this approach was a departure from the methodology used in previous reviews, and overlooks the fact that part of the uplift in the rating is linked to the government's stake in NERL. Oxera thought that PwC did not consider how the possibility of a reduction in the government's stake in NERL could affect the cost of raising new finance during RP2. Oxera concluded that to ensure that the cost of new debt assumption is robust to a range of scenarios for RP2, the established methodology of using a notional stand-alone credit rating to estimate the cost of new debt is considered more appropriate.

E18 The CAA considers that PwC's approach is appropriate. Credit rating agencies, and therefore creditors, take comfort that NERL is a government related issuer. As a consequence NERL's cost of debt is lower than it would otherwise be. If the CAA was to assume the standalone credit rating, then NERL's shareholders would benefit from this lower cost of debt. If the CAA was to use the actual credit rating, then this benefit is passed on to users. The CAA considers that it is appropriate that this benefit is passed on to users as it its users who could ultimately pay (through higher charges) if the charges were increased in the event of financial distress. The 'government support' to which Oxera refers might not be in the form of additional equity funding in the event of financial distress.

E19 Second, Oxera considered, even under PwC's chosen methodology, the cost of new debt was understated due to a selective review of the available evidence. Oxera's view was that:

- PwC used information from only one credit rating agency (S&P) in order to arrive at its view of the target credit rating—this led PwC to adopt a higher target credit rating than would be justified if PwC also used evidence from Moody's.
- PwC placed too much weight on the current yield of NERL's bond, which understated the cost of new debt for NERL due to its relatively short duration.

E20 Oxera considered that correcting for these factors would suggest that the cost of new debt should be around 2.3%, rather than 1.75% used by the CAA.

E21 Finally, Oxera suggested that PwC's allowance for debt fees was understated. It proposed 10bp on the basis that this is the same allowance as for Heathrow for Q6. However, the CAA's allowance for Heathrow for Q6 was actually 15bp. The CAA agrees and has increased the allowance for fees within the cost of debt to 15bps, and as a consequence has increased the cost of debt allowance to 2.5%.

E22 Taking all of these factors together, Oxera considered that the cost of debt range was, on balance, understated. Oxera considered that its original range of 2.5–2.7% remained appropriate.

E23 The airlines thought that it was highly likely that the CAA had falsely and erroneously set a cost of debt that was too high. The airlines considered that PwC's choice of debt index, which it thought included financial institutions was likely to overstate the cost of debt for a notionally efficient and low risk company like NERL. The airlines considered that NERL must be benchmarked using indices of institutions with broadly comparable risk factors. The CAA notes that, amongst other evidence, it took into account the yields on NERL's bonds in its calculation of the cost of debt. Furthermore, it used data from bond indices (with the same credit rating as NERL), in its assessment. Credit ratings are often used by regulators as a way of identifying broadly comparable risk factors. The CAA considers that the airlines submission does not suggest that it is appropriate to revise its estimate of the cost of debt.

E24 The CAA notes that the cost of debt estimates by PwC (2.4% to 2.5%) and Oxera (2.5% to 2.7%) are fairly close. By increasing the

allowance for fees for NERL, the CAA's point estimate is 2.5% - the top of PwC's range and the bottom of Oxera's range.

Cost of equity

TOTAL MARKET RETURNS (TMR), RISK-FREE RATE AND EQUITY RISK PREMIUM (ERP)

E25 Oxera estimated a TMR of 6.5% to 7.25% which comprised an ERP of 5% to 5.5% and a risk-free rate of 1.5% to 1.75%.

E26 Based on a range of evidence, PwC recommended that the appropriate range for the TMR was 6.25% to 6.75%. The CAA notes that in the Competition Commission's recent provisional determination on Northern Ireland Electricity it assumed a TMR of approximately 6%[79]. Taking into account this evidence the CAA considers that the appropriate TMR is 6.25%.

E27 Oxera noted that the CAA's choice of total market returns (6.25%) was towards the low end of plausible values.

BETA

E28 Oxera concluded that at the very least the appropriate asset beta for NERL is unchanged from RP1 (0.6). This equates to an equity beta of 1.35% at 60% gearing.

E29 PwC estimated NERL's beta by considering traffic risk for the UK (based on airport betas), the way in which this is dampened by the traffic risk sharing mechanism in the charging regulations and whether the airport traffic risk need to be modified because of the nature of NERL's cost base.

E30 These factors were also considered for RP1, but compared to the CAA's RP1 decision, PwC has recommended that for each factor the risk faced by NERL is lower than previously thought.

E31 Combining this evidence PwC estimated that the appropriate equity beta (at 60% gearing) was 1.08 to 1.15 (compared to 1.35 for RP1). The CAA selected the mid-point in this range (1.11).

E32 The airlines considered that the CAA had overstated the risk of NERL. First, that there was a 'portfolio effect' for NERL compared to individual airports, second that the initial round of demand

[79] The final determination, the CC used a figure of 6.5%.

volatility/shock was borne by airlines (through yield management), third, that the CAA had overstated HAL's beta (used as an input in the estimation of NERL's beta). The CAA disagrees that HAL's beta is overstated, having recently concluded a two year review for the Q6 price cap. PwC , in coming to is recommended range and the CAA, in coming to its point estimate of 0.505 have taken into account the first two factors raised by airlines.

E33 NERL thought that when consideration was given to NERL's projected ratio of RAB to turnover in RP2, it was evident that this reduces significantly from CP3 levels and consequently points to an increase in volatility of earnings.[80] NERL believed that this additional evidence lent further weight to the view held by Oxera and NATS that NERL's asset beta should remain at 0.6 for RP2. The CAA notes that the RAB is forecast to reduce over RP2 because the depreciation allowance is greater than capital expenditure. As a consequence NERL is expected to generate more cash during RP2 than the previous five years. In light of this, the CAA considers that the reducing RAB to turnover ratio does not suggest that there is an increased volatility of returns in RP2 and that its beta estimate of 0.5 remains appropriate.

E34 Oxera considered that the CAA's assumption that NERL will be 16% lower-risk in RP2 than in CP3 was not sufficiently well evidenced. In its view a more comprehensive review of the evidence suggested NERL's asset beta, as a minimum, should be similar to Gatwick's and further, if anything, risk has increased rather than reduced since CP3.

E35 Oxera considered that in the absence of market data on betas for air navigation services, material changes in the beta assumption from previous price reviews must be well evidenced, in order to maintain regulatory stability and transparency. In Oxera's view the evidence base produced by PwC to substantiate the change in the beta was not considered to meet this test:

[80] NERL calculated that the ratio of closing RAB to total revenue was 2.1x at the start of CP3, is forecast to be 1.6x at the start of RP2 and just 1.2x at the end of RP2. This further reduction of the ratio in RP2, compared to CP3, means that the difference in this ratio relative to HAL and GAL is forecast to increase further in RP2.

- PwC's analysis made a number of unsupported assumptions about the link between asset beta and historical volatility of traffic; and
- PwC's analysis only considered the impact of traffic volatility on revenues, rather than profits and cash flows which were of more relevance to investors.

E36 Oxera considered that within PwC's framework of risk assessment, Oxera's analysis showed that NERL was clearly higher-risk than Heathrow and is closer in its risk profile to Gatwick. Based on the CAA's final decision for the airports, Oxera suggested that, as a minimum, NERL's asset beta should be 0.56—the same as Gatwick's.

E37 However, Oxera considered that its previous assessment of the forward-looking exposure to key business risks showed that risk was expected to be at least as high in RP2 as in CP3, implying that an asset beta of 0.60 used in CP3 was still appropriate. In Oxera's view the CAA had not presented any new evidence to substantiate why risk was decreasing relative to CP3. If anything, several changes to the regulatory regime introduced by the CAA—such as the change in the pension pass-through—potentially increase risk compared with CP3.

E38 Part of PwC's analysis uses the estimates for HAL's beta as an input into the assessment of NERL's beta. Consistent with its response to the recent Q6 price determination, the airlines considered that PwC (and the CAA) had significantly overstated HAL's beta. By extension, the airlines considered that the CAA had overstated the beta for NERL.

E39 The CAA continues to consider that the appropriate asset beta for RP2 for NERL is the midpoint (0.505) in PwC's recommended range (0.49 to 0.52).

E40 The CAA welcomes Oxera's analysis that attempts to assess the impact of the systematic risk (arising from systematic traffic volatility) on returns (Oxera uses EBITDA for this purpose). However, the CAA notes that in the case of airports the traffic risk is on passenger numbers, while for NATS it is on a service unit basis. As airlines pointed out, the initial round of demand volatility/shock is borne by airlines (through yield management) and then the airport. Secondly, although the DB pension scheme pass through mechanism is being

modified for RP2, HAL and GAL bear the full risk of their DB pension schemes.

E41 Furthermore, the CAA notes that the traffic risk sharing mechanism means that NERL bears all traffic risk when traffic varies within ±2%, 30% of the incremental risk when it varies between ±2% and ±10% and none of the increment risk over ±10%. It is the CAA's view, and is supported by the work of Steer Davis Gleave (on behalf of the PRB), that this provided NERL with significant protection to major downside systematic risk.

E42 The CAA notes that Oxera disagrees with SDG's assessment of the asset beta. SDG concluded that the appropriate beta range was 0.3 to 0.5 and that the business risk of ANSPs was similar to that of regulated utilities.

E43 Oxera has compared the beta for RP1 (0.6) and that proposed for RP2 (0.505) and has calculated that this means the CAA thinks that the risk is 16% lower than previously judged. While the comparison to RP1 is useful, PwC has assessed the beta afresh. Furthermore, the evidence base for RP2 also includes SDG's work.

E44 The ultimate choice of the beta estimate is one of judgement. The CAA has considered the evidence presented by stakeholders along with PwC's recommendations to the CAA and SDG's report for the PRB, and concluded that the appropriate asset beta for NERL is 0.505.

E45 The CAA notes that SDG use a slightly different method for re-gearing the asset beta into an equity beta. There are two differences between the CAA's approach and SDG's, however, these differences are broadly offsetting and therefore the CAA considers that the choice of method is not material. The CAA therefore concludes that the appropriate equity beta for RP2 is 1.11.

E46 Combining PwC's estimates for the components the post-tax cost of equity is in the range 6.69% to 7.55%. Combining the CAA's choice of point estimates for the components, the CAA's estimate of the post-tax cost of equity is 6.87%.

TAXATION

E47 Consistent with RP1, the CAA includes an allowance for corporate tax by including it in the WACC (the pre-tax WACC) and this is achieved

by uplifting the cost of equity by the forecast effective rate of tax for RP2.

E48 Initially the CAA calculated, based on the tax model shared by NERL, that the effective rate for RP2 was forecast to be 36%[81]. Following updates to the cost of capital, other building blocks and refreshing the macroeconomic assumptions this has increased slightly to 37%. This is significantly above the statutory rate (currently 21% and expected to be 20% from April 2015) and RP1 (27%) and control period before that (11%).

E49 The difference predominantly arises because of the difference between regulatory deprecation and capital allowances. Prior to RP1 capital allowances were greater than regulatory depreciation and therefore the effective tax rate was low, and recently this has reversed and now capital allowances are less than regulatory depreciation.

E50 Combining PwC's estimates for the components the pre-tax cost of equity is in the range 10.45% to 11.80%. Combining the CAA's choice of point estimates for the components, the CAA's estimate of the pre-tax cost of equity is 10.90%.

Overall cost of capital

[81] At the assumed gearing level of 60%.

Figure E.2: Proposed cost of capital for RP2

Percent	RP2 Proposals	PwC low	PwC high	RP1
Gearing	60	60	60	60
Pre-tax cost of debt	2.50	2.40	2.50	3.60
Total Market returns	6.25	6.25	6.75	7.00
Risk-free rate	0.75	0.75	1.25	1.75
Equity risk premium	5.50	5.50	5.50	5.25
Equity beta (number)	1.11	1.08	1.15	1.35
Post-tax cost of equity	6.87	6.69	7.55	8.80
Tax uplift	37	36	36	27
Pre-tax cost of equity	10.90	10.45	11.80	12.10
Vanilla WACC82	4.25	4.10	4.50	5.7
Pre-tax WACC	5.86	5.60	6.20	7.0
The rate applied to the RAB	Pre-tax WACC: 5.86%	n/a	n/a	ARR: 6.76

Source: CAA analysis and PwC report

E51 The CAA's point estimate for NERL's pre-tax WACC for RP2 is 5.86%. This represents the 41strd percentile in the range. The CAA has selected the top of the cost of debt range the bottom of the range for the total market returns – consistent with the Competition Commissions recent provisional determination on Northern Ireland Electricity.

E52 The CAA considers that it is appropriate to use this point in the range because it:

- reflects the relatively low level of capex in RP2 compared to regulatory depreciation (a high level of capex is often cited as a reason to chose a point estimate high in the range); and
- reflects the concept of the accounting rate of return[83].

[82] The vanilla WACC is the weighted average of the pre-tax cost of debt and the post-tax cost of equity.

[83] The WACC is ultimately a judgement within a plausible range of outcomes, formulaically applying the adjustment might result in spurious accuracy. However, the CAA considers that there was an argument for the use of the concept of the ARR because

Comparison to RP1

Figure E.3: Summary of the reduction compared to RP1

Percent	Vanilla WACC	Pre-tax WACC
RP1 Headline Rate	5.70	7.00
RP1 Effective Rate (ARR)	5.52	6.76
Reduction in total market returns	(0.23)	(0.32)
Reduction in beta	(0.41)	(0.57)
Reduction in cost of debt	(0.62)	(0.62)
Increase in tax	n/a	0.61
RP2 proposals	4.25	5.86

Source: CAA analysis

E53 In summary, the reduction in the pre-tax WACC compared to RP1 the result of:

- a reduction in the cost of debt, which is the result of a reduction in market rates and the higher credit rating assumption;
- a reduction in the cost of equity, which is a result of a reduction in the beta and a reduction in the total market returns assumption; partially offset by an increase in the effective tax rate; and
- comparison to other sectors.

E54 The CAA has compared its proposals to recent publications in other regulated UK sectors.

returns that are earned throughout the year can be reinvested. It is, therefore, something the CAA expects to take into account when judging where in the range to adopt its proposals for the WACC.

.

Figure E.4: Comparison to other regulated sectors' vanilla, adjusted WACCs

Regulator	Sector	Status	Date of decision	Appropriate comparative
Ofwat	Appointee (wholesale & retail combined)	Guidance	2014	3.85%
Ofgem	WDP - Elect Dist	Fast-track business plan	2013	4.02%
CC	Northern Ireland Elect.	Prov. Determination	2013	4.02%
Ofgem	Gas Distribution	Determination	2012	4.11%
ORR	Network Rail	Determination	2013	4.22%
CAA	**NERL**	**RP2 Proposals**	**2014**	**4.25%**
Ofgem	Gas Transmission	Determination	2012	4.30%
Ofgem	Elect. Trans., National Grid	Determination	2012	4.45%
Ofgem	Electricity Distribution	Determination	2009	4.59%
Ofcom	MCT	Determination	2011	4.60%
CAA	HAL	Determination	2014	4.66%
Ofgem	Elect. Trans., Scottish	Determination	2012	4.68%
Ofcom	Openreach	View	2013	4.90%
CAA	GAL	Determination	2014	4.90%
Ofcom	Rest of BT (not price controlled)	View	2013	5.70%

Note Ofgem: This is the lower figure after an adjustment is made by Ofgem equivalent to the ARR. In the excel models used by Ofgem to calculate the price controls, the closing RAB each year is discounted by the WACC, before applying the WACC to the simple average of the opening and adjusted closing RAB. Ofgem describe this as the NPV-neutral RAB base. For example see rows 13 to 32 of the RAV&Return sheet found at the following link http://www.ofgem.gov.uk/Networks/Trans/PriceControls/RIIO-T1/ConRes/Documents1/RIIO_ET1_FP_FinancialModel_dec12.xlsm.
Note CC: Although not explicitly stated in the CC's Provisional Determination, it appears that the CC did use the ARR as noted in one of the responses to the Provisional findings. http://www.competition-commission.org.uk/assets/competitioncommission/docs/2013/northern-ireland-electricity-price-determination/hastings.pdf
Note: ORR: The value shown is the semi annual WACC used by ORR which is the same as the ARR
Source: CAA Analysis

E55 In addition to the CC's NIE provisional determination, the general direction of regulatory decisions and/or views continues to support the

view that the WACC has reduced over recent years. The CAA's proposal on the WACC for NERL is consistent with all recent evidence from other UK regulated utilities and the CAA's understanding of the risk and price control design of these industries.

APPENDIX F

Revision of the 3Di model

F1 The main changes to the model inputs include measurement and internal reporting developments. The CAA encourages the improvement and refinement of the model where possible, and has worked with NATS to best understand the impact of these changes. The changes as described by NATS include:

- Enhanced radar data processing that enables better track inefficiency capture for the final flight leg within UK airspace
- Increased accuracy of spatial definition of the UK airspace boundary
- Improved logic for identification of periods of level flight
- Further radar processing and cleansing enhancements through incorporating processing within NATS new Business Intelligence platform
- Improved data capture over delegated Irish airspace
- Application of KEA based lateral track inefficiency capture and the ability to provide a more informative and summative 3Di score for contiguous airspace regions.

F2 Incorporating these changes, the model was re-estimated on the basis of the latest historical performance data. At this stage the interaction terms which were present in the RP1 model were removed to improve the stability and robustness of the model, with no material loss of accuracy.

F3 The table below shows the model coefficients as compared with those used in RP1:

Figure F.1: 3Di model coefficients

Parameter	3Di coefficients - RP1 Model	3Di coefficients - RP2 Model
Horizontal[84]	[---]	[---]
Climb	[---]	[---]
Cruise	[---]	[---]
Descent	[---]	[---]
Horizontal x Climb	[---]	-
Horizontal x Cruise	[---]	-
Horizontal x Descent	[---]	-

Review of deadband

F4 Reviewing the variation in the daily mean 3Di score for 2013 indicates a reduction in the standard deviation in the daily means when using the revised model, as compared with the old model (from 4.14 to 3.36). Given part of the reason for the deadband is to allow for statistical variation in the metric which is not related to performance, this reduced variation indicates a narrowing of the deadband is appropriate.

F5 The extent of the deadband required to allow for statistical variation in the metric has been estimated by calculating a 95% confidence interval around the annual mean of the 2013 daily 3Di scores under the revised model. This has been done as follows:

F6 Calculating daily standard deviation = 3.36

F7 To make an allowance for the increased uncertainty in the model due to changes in the network mix over time, a factor of 2 is applied to this to give an adjusted standard deviation of 6.72.

F8 Using the Central Limit Theorem, the adjusted standard deviation of the annual mean of the daily means is estimated as [6.72/sqrt(365)] = 0.35. Thus the estimated 95% confidence interval for the 3Di metric for 2013 under the revised RP2 model (and adjusted standard deviation as above) is 30.7 +/- 0.7, [30.0 - 31.4].

[84] In RP1, horizontal inefficiency was based on GCD, in RP2, it is to be based on KEA.

F9 In order to allow for a degree of performance variation in future years within the deadband, the boundaries have been set at twice the width of the estimated 95% confidence interval. Using the 2013 data, this would equate to 30.7 +/- 1.4, or approximately +/- 5%.

Transforming draft Performance Plan targets to the revised RP2 model equivalents

F10 NATS have proposed a straightforward 7 unit uplift in their proposed par values based on the straightforward difference between the 2013 3Di score under the two models, (30.7 - 23.7).

F11 The CAA however considered that a multiplicative scaling factor might be more appropriate given the magnitude of the target changes over the course of RP2. However, analysis of the 2013 daily 3Di scores under both models indicated that there is in fact a negative correlation between the magnitude of the scores and the difference between the two scores (correlation coefficient of -0.8), with the absolute difference between greater at lower levels.

F12 With this in mind, a simple linear regression of the difference in the two scores against the daily scores under the RP1 model was performed to help estimate the appropriate shift at different levels.

F13 The linear model estimated was:

F14 additive difference = 11.803 - (0.205 x 3Di daily score (old model)

F15 The model has an R-sq of 0.6.

F16 Applying the model to estimate the transformation required for the target par values in the draft Performance Plan (PP) indicated a range of +7.1 at a 3Di of 23 to +7.7 at a 3Di of 20.

The Annual Review process

F17 In the draft PP, this boundary by which the Annual Review would be deemed to have failed was proposed as +/- 12.5% based on the RP1 model.

F18 Review of the daily 3Di scores for 2013 under the revised RP2 model indicates that alongside the higher annual mean, there is also reduced standard deviation in the daily scores. In the RP1 model the 3 unit Annual Review limit equates to approximately 75% of the standard deviation of the daily scores (of 4.14). For the RP2 model, 75% of the

reduced standard deviation (of 3.36) is approximately 2.5 revised units.

F19 On this basis, using 2.5 units as a percentage of the 2013 3Di score under the RP2 model, an appropriate boundary was calculated as (2.5/30.7) x 100% = 8%.

APPENDIX G

Abbreviations

Abbreviations	
A-CDM	Airport Collaborative Decision Making
AMAP	Aviation Modernisation and Automation Project
ANS	air navigation services
ANSPs	air navigation service providers
ARR	accounting rate of return
ASMA	arrival sequencing and metering areas
ATC	air traffic control
ATCO	Air Traffic Control Officer
ATFM	air traffic flow management
ATM	air traffic management
C1	FAB capacity KPI#1 (ATFM delay)
C2	FAB capacity incentive on KPI#1 (ATFM delay)
C3	Additional UK Capacity incentive (Daily Excess Delay Score)
C4	Additional UK Capacity incentive (Impact Score)
CAA	Civil Aviation Authority UK (UK NSA)
CAAPS	CAA pension fund
Capex	capital expenditure
CARG	compound annual growth rate
CCWG	Customer Consultation Working Group
CFMU	Central Flow Management Unit
Charging Regulation	Commission Regulation No 391/2013 laying down a common charging scheme for air navigation services
COOPANS	Cooperation for Procurement of ANSP Systems
CPI	consumer price index
DAP	Directorate of Airspace Policy (CAA)
DB	defined benefit
DC	determined costs

Abbreviations	
DfT	Department for Transport (UK)
DSOT	Dynamic Sectorisation Operational Trial
DTTAS	Department for Transport, Tourism and Sport
DUC	determined unit costs
DUR	determined unit rate
EASA	European Aviation Safety Agency
EBITDA	earnings before interest, taxes, depreciation and amortisation
EoSM	effectiveness of safety management
EUMETSAT	European Organisation for the Exploitation of Meteorological Satellites
EURIBOR	Euro Interbank Offered Rate
FAB	functional airspace block
FAS	future airspace strategy
FDP	flight data processing
FIR	Flight Information Regions
FRA	Free Route Airspace
FUA	Flexible Use of Airspace
GATCO	The Guild of Air Traffic Control Officers
GDP	gross domestic product
HICP	Harmonised Index of Consumer Prices
HLS	High Level Sectors
IAA	Irish Aviation Authority (ANSP)
IAA SRD	Irish Aviation Authority Safety Regulation Division (Irish NSA)
IBP	initial business plan
ICAO	International Civil Aviation Organization
ICT	Information and Communications Technologies
IFR	Instrument Flight Rules
IMF	International Monetary Fund
JC	just culture
J&I	joint & integrated
KEA	horizontal en route flight efficiency of the actual trajectory
KEP	horizontal en route flight efficiency of the last filed flight plan

Abbreviations	
KPA	key performance areas
KPI	key performance indicator
LAMP	London Airspace Management Programme
MAG	Manchester Airports Group
MCA	Maritime and Coastguard Agency
METSPs	meteorological service providers
MoD	Ministry of Defence
NATS	NATS Holding Ltd
NERL	NATS En Route Limited
NIE	Northern Ireland Electricity
NMD	Network Management Directorate (Eurocontrol)
NSA	National Supervisory Authority
NSL	NATS Services Limited
NTCA	Northern Terminal Control Area
NTUS	NATS Trade Unions
OEF	Oxford Economics Ltd forecasts
Opex	operating expenditure
PBO	pensions benefit obligation
Performance Regulation	Commission Regulation No 390/2013 laying down a performance scheme for air navigation services and network functions
PP	Performance Plan
PPP	Public Private Partnership
PRB	Performance Review Body
PwC	PricewaterhouseCoopers
Q6	the sixth quinquennium (UK airport price control period)
RA	Resolution Advisory
RAB	regulatory asset base
RAT	Risk Analysis Tool
RBP	revised business plan
RP	reference period
RPI	retail price index
S&P	Standard &Poor

Abbreviations	
SARG	CAA Safety and Airspace Regulation Group
SES	Single European Sky
SESAR	Single European Sky ATM research
SMS	Safety Management Systems
SPI	safety performance indicator
SSC	Single Sky Committee
STATFOR	Eurocontrol Statistics and Forecasting Service
SUs	service units
TA	transition altitude
TANS	terminal ANS
TCAS	Traffic alert and Collision Avoidance System
TEN-T	Trans-European Transport Networks
TNSUs	terminal service units
TSUs	total service units
UIR	Upper Information Regions
WACC	weighted average cost of capital
WAFS	World Area Forecast System

APPENDIX H

First Economics: IAA cost of capital report

FIRST ECONOMICS

www.first-economics.com

IAA's En Route and Terminal Services Costs of Capital

Prepared for IAA

1 November 2013

1. Introduction

This report contains First Economics' estimates of the costs of capital for IAA's en route and terminal services businesses. It is intended to inform calculations of the allowed returns that are to be factored into RP2 en route and terminal services charges.

The paper is structured into seven main parts:

- section 2 outlines the methodology that we have used in our work;
- section 3 assesses the risk that IAA's equity carries and puts forward estimates of betas;
- section 4 gives a figure for gearing;
- section 5 provides a calculation of the cost of debt;
- section 6 contains estimates of the two generic parameters in the cost of equity calculation – the risk-free rate and the equity-risk premium;
- section 7 considers tax; and
- section 8 brings all of the preceding inputs together into overall estimates of the costs of capital.

2. Approach

The costs of capital that we consider in this paper are forward-looking estimates of the returns that the en route and terminal services businesses need to provide in order to attract and retain investor capital. In line with the terms of reference that were given to us by IAA, and consistent with regulatory practice more generally, we have deliberately sought to estimate this cost of capital independently from IAA's current ownership arrangements so that the return on offer through charge controls is capable of supporting any reasonable and efficient investor set.

The cost of capital is a weighted average of two components: the cost of equity (K_e); and the cost of debt (K_d), where the weightings (gearing or g) reflect the relative importance of each type of financing in a firm's capital structure.

$$WACC = K_d.g + K_e.(1-g)$$

The cost of debt is directly measurable and in the analysis that follows we use IAA's actual borrowing arrangements to calculate the value of K_d. The cost of equity, by contrast, cannot be directly observed and we have instead modelled the returns that we would expect a shareholder to demand in exchange for holding shares in a stand-alone en route business and a stand-alone terminal services business. The tool that we have used in our analysis is the CAPM, which relates the cost of equity to the risk-free rate (R_f), the expected return on the market portfolio (R_m), and a business-specific measure of investors' exposure to systematic risk (beta or β_e):

$$K_e = R_f + \beta_e \,.\, (R_m - R_f)$$

The two equations together show that our costs of capital calculations are based on estimates of five parameters: g, K_d, R_f, R_m and beta. In putting specific figures against each of these inputs we have sought to draw as far as possible on primary market data. We have also taken account of recent regulatory precedent, giving particular attention to the views that the Commission for Aviation Regulation, other Irish regulators and UK regulators have expressed in recent decisions. Inevitably, in many areas we have had ultimately to exercise a degree of judgment in order to be able to select precise numbers from the evidence we have collected, but we have tried in the analysis that follows to give a clear explanation for these judgments and to make our thinking as transparent as possible in order to assist the parties to forthcoming consultations.

3. Riskiness and Beta

We start deliberately with a section on risk profiles and betas on the basis that the analysis that follows describes the key features of the businesses whose costs of capital we are trying to estimate.

3.1 Preliminaries

Methodology

A firm's equity beta is a measure of the riskiness of a firm – or more specifically, a measure of the systematic risk that a firm presents – relative to the market portfolio. Firms that exhibit a beta of more than 1 can be considered more risky than the average stock market investment and need to pay their investors a higher-than-average return; firms with a beta of less than 1 are less risky and warrant lower returns; and firms with a beta of exactly 1 are seen by investors as being of equal risk to the market portfolio and are expected to generate a return in line with R_m.

Empirical estimates of beta are usually obtained by measuring the correlation between movements in a company's share price and movements in the value of the stock market as a whole. However, in this report we are interested in obtaining beta estimates for two unlisted businesses and cannot use market data directly. The next best alternative that we have is to collect beta estimates for companies that look to be in some sense similar and to make a judgment about the value of the en route and terminal services betas on the basis of this comparator evidence. This is an approach that has been deployed in an increasing number of periodic reviews during recent years as the number of regulated companies in Ireland and the UK with a stock market listing has become very limited, and is regarded as a robust and reliable way of assessing beta in the absence of direct stock market data.

Asset beta

When comparing the betas of different firms, one has to be careful to take account of the different gearing levels that firms choose since, all other things being equal, a firm with higher gearing will present higher risk to shareholders and exhibit a higher equity beta. Unless one controls for this effect, there is a danger of confusing the risk that comes from high leverage with the underlying business risk that a firm faces by virtue of the nature of the activities it is carrying out.

This is where the concept of an asset beta proves useful. An asset beta is a hypothetical measure of the beta that a firm would have if it had no debt and were financed entirely by equity. By comparing different firms' asset betas it becomes possible to isolate the underlying systematic

risk that a company has and carry out an assessment of the relative riskiness of different businesses.

The asset beta is calculated using the following formula:

$$\beta_a = (1 - g) \cdot \beta_e + g \cdot \beta_d$$

where β_a is a firm's asset beta, g is gearing and β_d is the firm's debt beta.[1]

A firm's actual gearing is something that is easily calculated using reported debt figures and market capitalisation, but a firm's debt beta is not something that is directly observable. We have assumed in our work that β_d is a constant of 0.1 (the value that the UK Competition Commission has used in its recent inquiries).

Confidence intervals

This provides a complete description of our methodology for estimating asset betas. The only other point we must make is that beta estimates are exactly that: estimates. Every estimate that we identify comes with a standard error and the figures that follow must be regarded as mid-points within wider confidence intervals.

3.2 Comparator analysis

Our comparator set comprises the most recent estimates of betas made by the Commission for Aviation Regulation, the Commission for Energy Regulation, the UK's Civil Aviation Authority, the UK's Competition Commission, Ofgem and Ofwat.

The comparator data is presented in table 1.

Table 1: Beta estimates used in recent periodic reviews

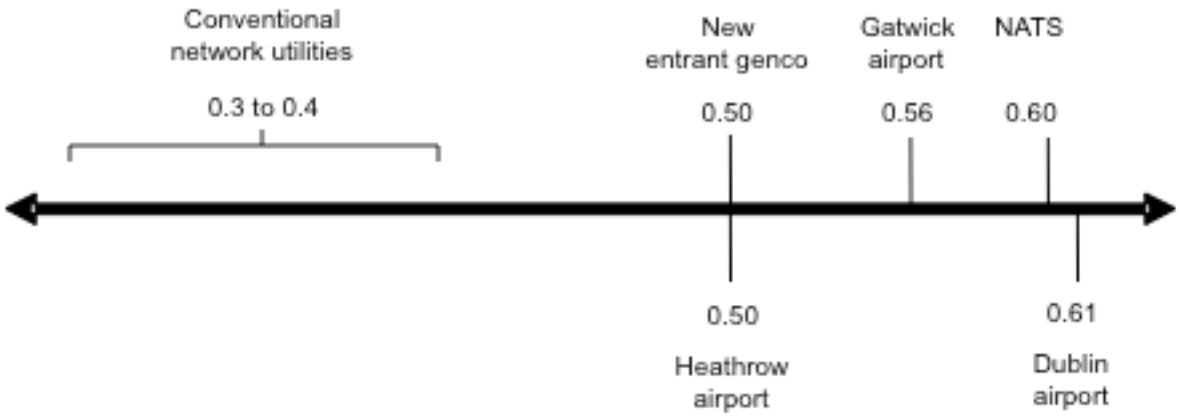
	Regulator's estimate of asset beta
Electricity, gas and water network utilities	0.30 to 0.40
New entrant generation plant	0.50
Dublin airport	0.61
Gatwick airport	0.56
Heathrow airport	0.50
NATS	0.60

References: Commission for Energy Regulation (2011), Decision on October 2012 to September 2017 transmission revenue for Bord Gais Networks; Ofgem (2012), RIIO-GD1: final proposals; Ofgem (2012), RIIO-T1: final proposals; Ofwat (2009), Future water and sewerage charges 2010-15 – final determinations; Competition Commission (2010), Bristol Water plc; Commission for Energy Regulation / Utility Regulator (2013), Single Electricity Market: fixed cost of a best new entrant peaking plant, capacity requirement and annual capacity payment sum for the calendar year 2013 – decision paper; Commission for Aviation Regulation (2009), Determination on maximum levels of airport charges at Dublin airport; CAA (2013), Estimating the cost of capital: a technical appendix to the CAA's final proposal for economic regulation of Heathrow and Gatwick after 2014; and CAA (2010), NATS (En Route) plc price control – CAA formal proposals for control period 3 (2011-14).

[1] For those that have not come across this concept before, a debt beta is similar to the equity beta, but rather than measuring the systematic risk taken by the company's shareholders, it represents such risk presented to the company's lenders.

Figure 2 presents the same information graphically.

Figure 2: Summary of comparator analysis



The chart shows that conventional utility network companies have the lowest asset betas and that other regulated companies have been ascribed betas which sit at a premium to this base. This is a picture that can be found in many similar reports and should not be regarded as controversial in itself. The difficult decision that we face is not to identify the betas of comparator companies but to position IAA's en route and terminal services businesses at an appropriate point in the spectrum.

3.3 En route and terminal services betas

Approach to comparisons of riskiness

In working through this task it is useful to highlight four main determinants of the (systematic) risk that the equity in IAA bears.

- Demand variability – IAA operates in markets where demand for its services is very closely correlated to the overall volumes in the aviation sector. These volumes will in turn be sensitive to macroeconomic conditions, insofar as a downturn in the local or global economy will cause people to travel less and cause airlines to fly fewer planes, and vice versa for any upturn. The aviation sector has also shown itself to be very sensitive to other shocks, including terrorist incidents and even volcanic eruptions.
- Cost variability – IAA relies heavily on direct and indirect staff to carry out its functions. As labour becomes more expensive, whether through wages, social security costs or pension costs, IAA's costs will go up, and as labour becomes less expensive costs will go down. Similarly, on the capex side of costs, IAA is exposed to changes in the costs of IT products.
- Regulation – the two previous risk factors cannot be looked at in isolation from the important role that regulation plays in determining the way in which changes in volumes or costs translate into changes in profit. Through the design of charge control arrangements and associated incentive mechanisms the European Commission and the Commission for Aviation Regulation exert a significant degree of control over the degree to which shareholders are exposed to risk – a situation that distinguishes regulated companies from unregulated companies. In particular, risk-sharing arrangements around volumes, where

available, can offer shareholders protection against changes in demand, while the feed through within between IAA's actual costs and prices will determine how far shareholders are exposed to cost shocks.

- Cost/revenue structure – a final consideration is the sensitivity of profit to out-/under-performance against the networks' price control assumptions. In particular, it is now widely acknowledged in regulation that companies which have small asset bases in comparison to ongoing revenues present shareholders with much greater risk than companies which have large asset bases in comparison to ongoing revenues.

The first three items on this list are fairly straightforward to understand, but the fourth merits a slightly more detailed explanation. In the worked example below, we depict two companies with identical ongoing expenditures. They differ only insofar as company A has a small regulatory asset base and company B has a large regulatory asset base. Both companies set charges so as to be able to cover their expenditure plus a return on the RAB. For the purposes of this illustration, let us assume initially that both companies seek a return of 10% per annum.

Table 3: Illustrative worked example

	Company A	Company B
RAB	€100m	€1,000m
Expenditure	€200m	€200m
Return on RAB @ 10%	€10m	€100m
Revenues	€210m	€300m

Now consider what happens to these companies when they experience the same percentage cost overrun or the same percentage revenue loss. Although the absolute €m loss of profit is similar in both companies, the percentage loss is far greater for company A with the small RAB than it is for the company B with the larger RAB.

Table 4: Revenues, costs and profits after a 2% cost shock

	Company A	Company B
RAB	€100m	€1,000m
Revenue	€210m	€300m
Expenditure	€204m	€204m
Profit	€6m	€96m
Profit as % of RAB	6%	9.6%

Table 5: Revenues, costs and profits after a 2% revenue shock

	Company A	Company B
RAB	€100m	€1,000m
Revenue	€205.8m	€294m
Expenditure	€200m	€200m
Profit	€5.8m	€90m
Profit as % of RAB	5.8%	9.4%

An exactly analogous story can be told of the effects of unexpected cost reductions and about revenue gains, insofar as a given cost or revenue shock causes a greater percentage change in profits for companies with small RABs.

This provides important insights into the riskiness of different firms because it shows that the variability in out-turn profits is not just a function of the likelihood and scale of cost and demand shocks, but also the upfront margin that is factored into allowed revenues. Holding all other things equal, shareholders in a regulated company with a small RAB/profit relative to ongoing costs are likely to suffer proportionately more when downside shocks occur (and gain more following upside events) in comparison to shareholders in firms whose RABs/profits are large relative to ongoing costs.

This higher potential volatility in profits makes companies with high 'operational gearing' more risky in the eyes of shareholders. Consequently, a firm with a small RAB would not have the same cost of capital and would not seek the same return as a company with a large RAB. It would instead need to factor a higher cost of capital upfront into its charges.

Comparison of risk profiles

It follows that in order to understand how much risk the different shareholders in our sample of comparator firms are exposed to one has to look holistically at the potential volatility in demand and costs, take the range of outcomes that one can envisage through the sector's regulatory rules and then examine the impact on each comparator's profits. It is not possible to evaluate riskiness without taking the full chain of events into account – in particular, we would caution anyone from making judgments about a business's risk profile on the basis of perceptions of industry demand and industry cost variability alone.

Despite their similarities, the regulated companies in table 1/figure 2 are not identical in any of the above respects, as table 6 demonstrates.

Table 6: Characteristics of regulated companies

	Exposure to demand risk	**Exposure to cost risk**	**Operational gearing**
Conventional utility utilities	Low – companies typically have revenue caps, giving a fixed entitlement to collect revenues irrespective of demand	Low – costs are mainly repeated opex and capital works. Costs have high labour content, with some exposure to commodity prices and the construction cycle. Price control design exposes companies to a fixed proportion of variations in most of these costs.	Low to moderate – typical RAB-to-revenue ratios for network utilities are 4 to 6 times
New entrant genco	Moderate – volumes/sales are sensitive to GDP growth, although a capacity payment mechanism provides some guaranteed income	Moderate – costs comprise mainly fuel purchase costs and some labour costs, giving exposure to commodity prices. Cost recovery is via the competitive market	n/a
Dublin airport	High – passenger volumes are highly sensitive to GDP growth and industry shocks. Dublin airport is regulated via a price cap, in which a change in volume feeds	Low to moderate – costs are mainly repeated opex and capital works. Costs have high labour content, with some exposure to commodity prices and the construction cycle and	Moderate to high – RAB-to-revenue ratio of 2.5 times

	through 1-for-1 to a change in revenues.	a more noticeable exposure to swings in utility and security costs. The Commission's price control design exposes the airport to variations in these costs until a price control reset after five years.	
Heathrow airport	High – passenger volumes are highly sensitive to GDP growth and industry shocks. Heathrow is regulated via a price cap, in which a change in passenger numbers feeds through 1-for-1 to a change in revenues.	Low to moderate – costs are mainly repeated opex and capital works. Costs have high labour content, with some exposure to commodity prices and the construction cycle and a more noticeable exposure to swings in utility and security costs. The CAA price control design exposes the airport to variations in these costs until a price control reset after five years.	Low – RAB-to-revenue ratio of 6 times
Gatwick airport	High – passenger volumes are highly sensitive to GDP growth and industry shocks. Gatwick is regulated via a price cap, in which a change in passenger numbers feeds through 1-for-1 to a change in revenues.	Low to moderate – costs are mainly repeated opex and capital works. Costs have high labour content, with some exposure to commodity prices and the construction cycle and a more noticeable exposure to swings in utility and security costs. The CAA price control design exposes the airport to variations in these costs until a price control reset after five years.	Low to moderate – RAB-to-revenue ratio of 4.5 times
NATS	Moderate to high – service unit volumes are sensitive to GDP growth and industry shocks. The CAA's price cap design provides for: - NATS to bear volume risk if service unit volumes are within ±2% of forecast - revenues gains and revenues losses to be split 30% to NATS and 70% to airlines when service unit volumes move beyond 2% but below 10% of forecast - airlines to bear volume risk beyond ±10% of forecast	Low – costs are a mixture of repeated opex plus IT investments. The CAA's price control design exposes NATS to variations in its opex until a price control reset after four or five years, but actual capex costs are passed through to airlines pound-for-pound if efficiently incurred.	Moderate to high – RAB-to-revenue ratio of 1.7 times

Source: First Economics' analysis.
Note: the RAB-to-revenue metric is intended to capture the observations we made earlier about the higher riskiness of firms with small RABs/profits. A high RAB-to-revenue ratio implies that profits are fairly resilient in the face of shocks and a small RAB-to-revenue ratio implies that returns can be affected quite significantly by even small variations in costs and revenues. Our calculations of revenues include both the aeronautical revenue and non-aeronautical revenue that is included in the regulators' price control calculations.

We make the following observations about the entries in this table:

- the conventional network businesses all exhibit negligible revenue risk, relatively low cost risk, and have sizeable RABs. This largely explains why they sit at the left-hand side of the spectrum that we drew in figure 2; and
- all of the companies that sit to the right of the energy and water networks have fairly obvious characteristics that make them riskier in the eyes of investors. Exposure to demand and revenue risk, in particular, causes a new entrant genco and airports to have a higher equity beta than the conventional network utilities, while NATS' relatively small RAB also explains its higher cost of capital.

Assessment

The position of IAA's en route and terminal services businesses depends crucially on the regulatory framework that they operate under in future.

The Charging Regulation requires that en route and terminal services charges are to be fixed in advance for each new Reference Period, and adjusted thereafter only in accordance with a set of common principles. These include the following allocations of volume and cost risk:

- volume risk is to be allocated in such a way that –
    - the ANSP takes any gain or loss of revenue if service units are within ±2% of forecast;
    - gains and losses in revenue are to be split 30% to the ANSP and 70% to the airlines after actual service units move more than 2% but less than 10% outside of forecast;
    - airlines take all of the gain or loss of revenue once service units are more than ±10% outside of forecast;
- differences between actual and forecasts costs are to be borne by the ANSP except where it has been deemed in advance that items of cost are outside of the ANSP's control

We can therefore add two further entries to the list in table 6 as follows.

Table 7: Characteristics of regulated companies

	Exposure to demand risk	**Exposure to cost risk**	**Operational gearing**
IAA – en route	Moderate to high – service unit volumes are sensitive to GDP growth and industry shocks. The Charging Regulation requires: - IAA to bear volume risk if service unit volumes are within ±2% of forecast - revenues gains and revenues losses to be split 30% to IAA and 70% to airlines when service unit volumes move beyond 2% but below 10% of forecast - airlines to bear volume risk beyond ±10% of forecast	Low to moderate – costs are a mixture of labour opex plus IT investments. It is expected that IAA will be exposed to variations in these costs until a price control reset after five years.	Very high – RAB-to-revenue ratio of 0.7 times

IAA – terminal services	Moderate to high – service unit volumes are sensitive to GDP growth and industry shocks. There is also a dependence on two main airline customers. The Charging Regulation requires: - IAA to bear volume risk if service unit volumes are within ±2% of forecast - volume risk to be split 30% to IAA and 70% to airlines if service unit volumes are beyond 2% but below 10% of forecast - airlines to bear volume risk beyond ±10% of forecast	Low to moderate – costs are a mixture of labour opex plus IT investments. The Commission's price control design exposes IAA to variations in these costs until a price control reset after four years.	High – RAB-to-revenue ratio of 1.1 times

When we add the entries in table 7 to the comparator set in table 6 we can observe that:

- exposure to volume risk and small RABs / high operational gearing mean that it is very clear that both businesses are more risky than conventional network utilities and should have betas which are significantly higher than such companies;
- there are offsetting factors to consider when comparing to Dublin, Heathrow, Gatwick airports. The airports are exposed to more volume risk, both by virtue of having price caps defined with reference to passenger numbers rather than service units and by taking volume risk in full without recourse to sharing arrangements. But the airports also have significantly lower operational gearing, meaning that shocks, when they occur, have less of an impact on returns as a % of the RAB; and
- IAA's shareholders face unequivocally more uncertainty around returns than NATS shareholders. IAA and NATS are regulated in a similar way, but IAA's returns are the most risky due to the smaller asset bases and higher operational gearing in both the en route and terminal services businesses.

These observations help us to position the IAA betas.

Looking first of all at the comparison to NATS, we can say that the IAA betas should be above NATS' beta.

Turning next to the airport betas, we have to make a judgment about the extent to which higher operational gearing and lower volume risk offset each other. Our view is that the first of these things outweighs the second. Even if IAA's service unit volumes stay within the first ±2% band in the new volume risk-sharing scheme, IAA can lose or make money equivalent to 35% of the profit that was factored into the current terminal services charge control calculation.[2] By comparison, Dublin Airport would need a misforecast of passenger volumes of around 10% in

[2] A 2% loss of revenue for the terminal services business is worth just over €400k. This compares to a return on the RAB of around €1.2m.

order to suffer the same sort of loss or gain in profit.[3] For Gatwick and Heathrow, the figures are around 15% and 18% respectively.[4] These rough calculations show that IAA has much less certainty around profit in comparison to the airport companies.

This benchmarking tells us that the terminal services and en route betas should naturally sit at the right-hand end of the spectrum that we drew in figure 2. Making point estimates is by no means straight-forward. The Commission for Aviation Regulation has previously estimated the terminal services asset beta to be 0.65 and we have no reason to depart from this figure. There is an argument that the en route business's smaller RAB / higher operational gearing means that it should have a slightly higher beta, but we also note that the en route business has a more diversified customer base which will help mitigate against shocks when they occur. On balance, we think that it is appropriate to use an asset beta of 0.65 for both businesses.

4. Gearing

The estimate that we make of gearing affects the weightings of the cost of debt and cost of equity components of the weighted average cost of capital calculation. They are also important inputs to the calculation of the cost of debt and cost of equity themselves as, all other things being equal, a higher level of gearing will increase the risk to both debt and equity holders, causing them to demand a higher return in exchange for making capital available.

The Charging Regulation specifies that the weights given to debt and equity in the cost of capital calculation "shall be based on the proportion of financing through debt or equity". Table 8 records the amounts of debt that IAA had outstanding versus the value of its fixed assets plus net current assets at the end of last three accounting years.

Table 8: Gearing calculation for IAA

	2010	2011	2012	3-year average
Creditors: amounts falling due after more than 1 year	€19.6m	€9.3m	nil	-
Fixed assets + net current assets	€161.9m	€167.3	€177.3m	-
Gearing	12.1%	5.6%	nil	5.9%

IAA has told us that it expects to incur zero borrowings for the foreseeable future. One approach that we could take in this paper, therefore, would be to ignore debt and calculate the cost of capital for a wholly equity financed company.

We prefer not to take this approach on the basis that the future is uncertain – i.e. an intention not to incur borrowings might not lead to zero borrowings in reality. Factors that could cause IAA to have a need for external financing during the next 5-6 years include the bringing forward of new capital investment, external shocks to revenues or costs, or a change in IAA's approach towards

[3] A 10% loss of airport charges revenue is worth around €16.5m. This compares to a return on the RAB of around €50m.
[4] At Gatwick, a 15% loss of airport charges revenue is worth around £50m. This compares to a return on the RAB of around £150m. At Heathrow, an 18% loss loss of airport charges revenue is worth around £270m. This compares to a return on the RAB of around £770m.

distributions and capital structure. We note that IAA has anticipated such eventualities by securing five-year revolving credit facilities with a total limit of €30m.

If we anticipate, as a precaution, some level of borrowing in our cost of capital calculations, we can ensure that new charge controls permit IAA to access this new debt finance as required. We therefore think it is appropriate to assume a modest level of gearing in our analysis. The figure that we choose is 10%, slightly above IAA's actual average gearing during the last 3 years, but below the gearing that IAA exhibited as recently as 2010.

5. Cost of Debt

The Charging Regulation specifies that the allowed cost of debt should be "equal to the average interest rates on debts of the air navigation services provider". IAA's revolving credit facilities have the following costs:

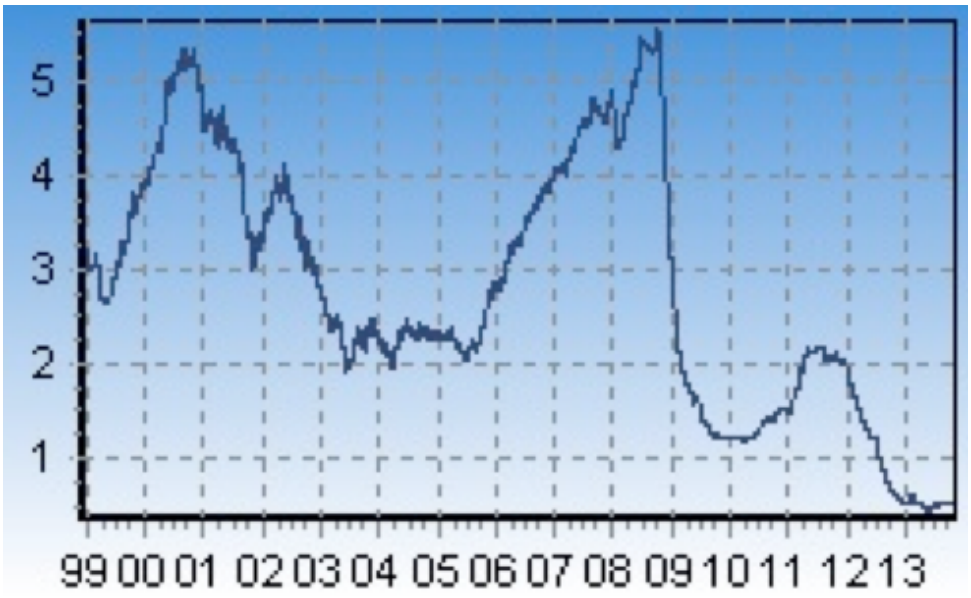
- facility 1, €15m – EURIBOR plus 2.9%; and
- facility 2, €15m – EURIBOR plus 1.85%.

Both facilities require an upfront arrangement fee of 0.5% of €15m (i.e. €75,000) plus annual commitment fees of 40% of the stated margins. Facility 2 also has annual utilisation fees of 0.1% for borrowing of up to €5m, 0.5% for borrowing of between € 5m and € 10m and 0.65% for borrowing of more than €10m.

Our 10% gearing assumption translates into borrowing of around €20m per annum on average during the next five years. We understand that IAA is required to draw on the two facilities in equal amounts – i.e. borrowing of €20m will constitute a drawdown of €10m from facility 1 and €10m from facility 2.

In order to estimate the cost to IAA, we need to make a forecast of EURIBOR. The spot rate at 1 November 2013 was a little over 0.5%. However, as figure 9 shows, rates during 2013 have been at historical lows.

Figure 9: Historical values of 12-month EURIBOR



Source: www.euribor-rates.eu.

Prima facie, we would expect interest rates to start to move up as eurozone GDP growth recovers and central banks end their programmes of quantitative easing. Predicting exactly where rates will settle during the periods covered by the IAA's new charge controls is not an exact science. EURIBOR rates are closely linked to the European Central Bank's (ECB's) key interest rate (the rate of interest on main refinancing operations) and the guidance from the ECB, and from central banks in the US and the UK, has been that interest rates will be held low for so long as there is spare capacity in the economy. This has (deliberately) created an expectation that rates will not rise for 2-3 years.

For the purposes of this analysis, we forecast that ECB's benchmark interest rate and, hence, EURIBOR will average 2% over the periods covered by IAA's new en route and terminal services charge controls. We would stress, however, that this is an assumption that IAA will need to keep under review in the 12-24 months before the finalisation of those charge controls, with a view to revising our forecast up or down as new economic data becomes available.

Our calculation of the cost to IAA of borrowing €20m, consistent with an average EURIBOR rate of 2%, is set out in table 10.

Table 10: Cost of debt calculation

Tranche	Type of cost	Cost
Facility 1 - €10m	Arrangement fee (annualised) Interest @ 4.9% Commitment fee	€15,000 €490,000 €58,000,
Facility 2 - €10m	Arrangement fee (annualised) Interest @ 3.85% Commitment fee Utilisation fee	€15,000 €385,000 €37,000 €30,000
	Total interest cost	€1,030,000
	Total interest cost / €20m	5.15%

The cost of debt that goes into our cost of capital calculation is a real, inflation stripped cost of debt. Our forecast of CPI inflation comes from the International Monetary Fund's October 2013 World Economic Outlook.

Table 11: IMF CPI annual inflation forecasts (%)

	2013	2014	2015	2016	2017	2018
CPI inflation	1.0	1.2	1.4	1.6	1.7	1.7

Source: IMF World Economic Outlook.

The IMF forecast has CPI inflation accelerating from 1.0% in 2013 to 1.7% by the end of the forecast period. We take the average annual inflation rate of 1.6% as our forecast of average annual inflation rate over the periods covered by the next en route and terminal service charge controls.

This means that our 5.15% nominal cost of debt translates into a real cost of debt of 3.5%.[5]

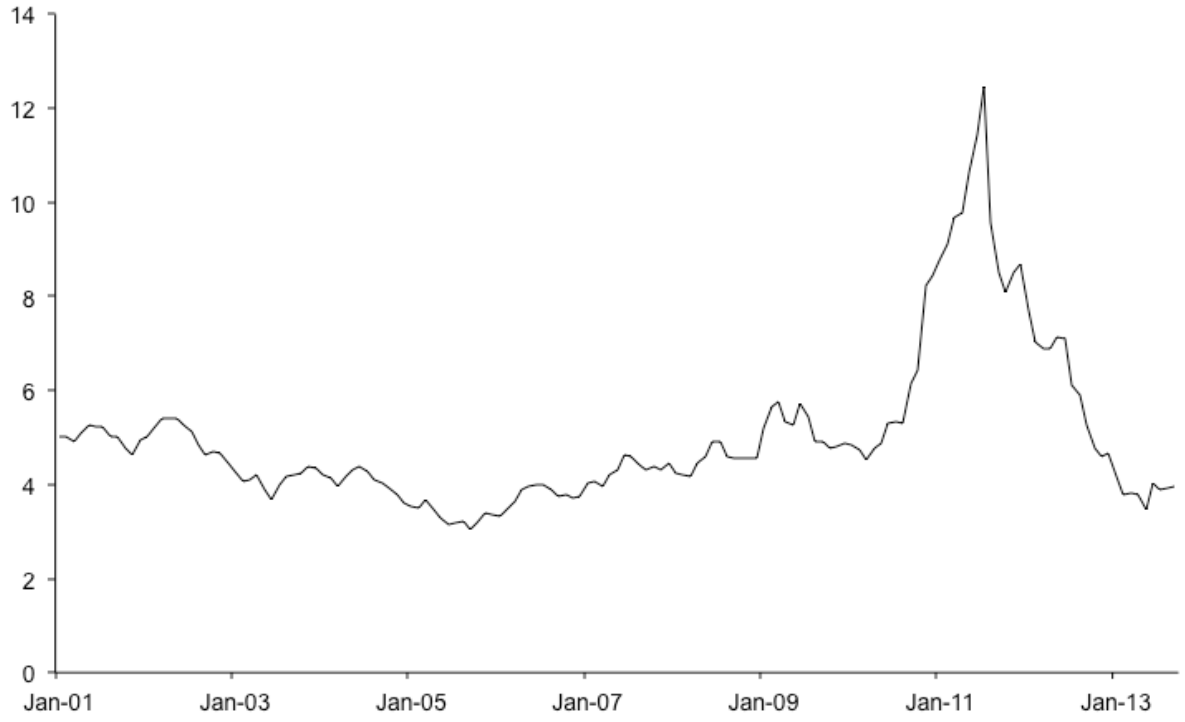
6. Generic Cost of Equity Parameters

6.1 Risk-free rate

Having estimated the cost of debt directly, an estimate of the risk-free rate is needed solely for the purpose of estimating the cost of equity.

The approach used by regulators to assess the risk-free rate has in the past been to analyse yields on government-issued gilts. Figure 12 below plots the yield on a 10-year Irish government bond since 2001.

Figure 12: Ireland ten-year government gilt yields



Source: ECB.

The main observation we would make about this chart is that gilt yields have been heavily affected by the financial crisis. Prior to late 2008, when investors first took fright at the integrity of the financial system, yields were fairly consistently between 3.5% and 5.0%. Thereafter yields rose considerably as confidence in Irish government's ability to pays it debts drained away. That confidence appears then to have returned gradually since mid-2011 and yields now lie below 4%.

When looking at this data, we consider the yields from the last five years to be so heavily distorted by the financial crisis as to give almost no information about the returns that shareholders require in exchange for holding risk-free assets in normal market conditions. We therefore think we should disregard post-August 2008 data completely.

We feel much more comfortable looking at pre-August 2008 data as an indicator of the 'true' risk-free rate. In the eight years prior to the financial crisis, 2001 to 2008, yields on our benchmark

[5] The formula is: (1 + nominal cost of debt) = (1 + real cost of debt) x (1 + inflation).

gilts from figure 12 averaged approximately 4.25% per annum. If we strip this figure for forecast average annual CPI inflation of 1.6%, we get a real risk-free rate of 2.6%.

This is also the sort of risk-free rate that regulators in Ireland were including in regulatory determinations prior to the onset of the financial crisis. However, it is below the risk-free rate that the Commission for Energy Regulation has been allowing in recent, post-crisis determinations.

Table 13: Real risk-free rate assumptions in relevant regulatory reviews

Decision	Risk-free rate assumption	Year
CER – energy networks	2.2% to 2.5%	2005-07
CAR – Dublin airport	2.5%	2009
CER / UR – new entrant genco	4.75%	2012
CER – Bord Gais	4.75%	2012

We think it is appropriate to use the long-term historical benchmark for the purposes of setting two charge controls which do not commence for at least another year and which span all the way to 2019. We therefore factor a figure of 2.6% into our calculations.

6.2 Equity risk premium

The final input into CAPM is R_m, the return on the market portfolio. Some cost of capital studies arrive at a value for R_m directly. Others come at R_m indirectly by estimating an equity-risk premium and adding this figure to the risk-free rate. We take the latter approach in this paper to be consistent with regulatory practice generally in Ireland.

Data for the premia that global stock market investments have given investors historically have been compiled by Dimson, Marsh and Staunton all the way back to 1900. Their latest estimates are reproduced below.[6]

Table 14: Historical worldwide equity premia (annualised)

	Equity premium over bond returns
Ex post estimates, long-term historical data	
Dimson, Marsh, Staunton 2013, geometric averages	4.1%
Dimson, Marsh, Staunton 2013, arithmetic averages	5.3%
Ex ante estimates, long-term historical data	
Dimson, Marsh, Staunton 2013, geometric averages	3.5% to 4.0%
Dimson, Marsh, Staunton 2013, arithmetic averages	4.5% to 5.5%

This range in this table arises mainly from two methodological issues: the choice between using arithmetic and geometric approaches to averaging returns over time; and the alternatives of

[6] Dimosn, Marsh, Stauton (2008), The worldwide equity premium: a smaller puzzle; Dimson, Marsh, Staunton (2011), Equity premlums around the world; Credit Suisse Global Investment Returns Yearbook 2013.

using ex post measures of the return earned or ex ante measures of the return that was originally expected.

These issues have been discussed at length in the regulatory cost of capital literature. The view of the UK's Competition Commission has been that:

- geometric averages are likely to understate market returns for the purposes of calculating an assumption to be used in a forward-looking cost of capital, while arithmetic averages are likely to overstate returns; and
- there is some evidence that investors in the twentieth century enjoyed unusual good luck. There is therefore a credible argument to say that investors' expected return, both historically and going forward, sits below ex post measures of historical stock market returns.

We take this to mean that there is no uniquely 'right' way of measuring the equity-risk premium.

It is instructive therefore to look at the equity-risk premium estimates that have appeared in recent regulatory decisions.

Table 15: Equity-risk premium assumptions in recent regulatory reviews

Decision	Equity market return assumption	Year
CAR – Dublin airport	5.0%	2009
Ofwat – water and sewerage	5.4%	2009
CC – Bristol Water	5.0%	2010
CAA – NATS	5.0%	2010
CER / UR – new entrant genco	4.75%	2012
CER – Bord Gais	4.75%	2012
Ofgem – energy networks	5.25%	2012
CAA – Heathrow/Gatwick airports	5.75%	2013

This body of precedent contains a fairly narrow range for the equity-risk premium from 4.75% to 5.75%. Indeed, if we ignore the CAA's figure for Heathrow/Gatwick, which was paired with an unusually low risk-free rate of 1%, the relevant range narrows further to 4.75% to 5.4%.

We use a figure of 5.0% in our calculations. This is consistent with the views expressed by the Commission of Aviation Regulation in previous price control reviews and, hence, causes no disturbance to local regulatory precedent.

Combined with our risk-free rate of 2.6%, our expected return on the market portfolio is 7.6%.

7. Tax

The prevailing corporation tax rate in Ireland is 12.5%. Because our costs of capital are pre-tax costs of capital, we need to uplift our CAPM cost of equity calculations by this amount if we are to ensure that charge controls cover return shareholders their full cost of equity after the payment of tax on profits.

8. Overall Cost of Capital Calculation and Conclusions

Table 16 combines our individual component estimates into a range for the overall pre-tax cost of capital.

Table 16: Proposed range for the IAA costs of capital

	En route	Terminal services
Gearing	0.1	0.1
Cost of debt (%)	3.5%	3.5%
Risk-free rate (%)	2.6%	2.6%
Market return (%)	5.0%	5.0%
Asset beta	0.65	0.65
Equity beta	0.71	0.71
Post-tax cost of equity (%)	6.16%	6.16%
Tax (%)	12.5%	12.5%
Pre-tax cost of equity (%)	7.03%	7.03%
Pre-tax WACC (%)	6.7%	6.7%

Our estimated costs of capital are 6.7% for both the en route business and the terminal services business.

It may be helpful to compare these figures to other relevant benchmarks, as follows.

Our estimates are slightly below the 7.0% cost of capital that NERL has factored into its RP2 business plan.

Our estimates also sit slightly below the 7.0% cost of capital that the Commission for Aviation Regulation included in Dublin Airport's price control. This is principally because we have allowed for lower gearing (0.1 vs 0.5 for Dublin airport) and a lower cost of debt (3.3% vs 4.1%) in our calculations, more than offsetting the higher choice of betas.

Our estimates sit above the 5.4% cost of capital that the Commission used when setting IAA's existing terminal services price control. This is principally because we have used a higher risk-free rate (2.6% vs 1.5% in the Commission's 2011 calculations) and calculated a higher cost of debt (3.3% vs 2.02%).

We are happy that the evidence outlined in the paper supports the figures that we are proposing. We therefore commend them to IAA.