UK Civil Aviation Authority and Irish Aviation Authority
Safety Regulation Division

Draft UK-Ireland RP2 performance plan consultation document

February 2014

Draft UK Ireland RP2 Performance Plan – Consultation Document

Issue 1 - 19 February 2014

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Contents

Executive Summary

1. This document forms part of a consultation process on the UK-Ireland draft 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 draft UK-Ireland Performance Plan in the formal template.

Performance Scheme

2. The Performance Scheme is an European Union (EU) initiative to improve the performance of Air Navigation Services (ANS) in the four key performance areas (KPAs): safety, environment, capacity and cost efficiency. The draft Performance Plan (PP) includes incentives (both bonus and penalty) for capacity, environment and cost-efficiency. Due to its overriding nature safety is not subject to financial 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	-	-	-	-	C
	ANSPs	-	-	-	-	D
RAT	SMIs	-	-	80%	80%	100%
	RIs	-	-	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 also 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	0.28	0.29	0.29	0.29	0.28
FAB target	0.28	0.28	0.28	0.28	0.28

Figure 3: Terminal capacity targets

(mins delay/flight)	Average/Range 2015-2019
UK	1.11
Ireland	0.08-0.12

6. The proposed UK-Ireland FAB target for capacity (en route ATFM delay) is consistent with, and in 2016 - 2018 more challenging than, the EU wide target and associated indicative FAB reference value.

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

9. 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 Future Airspace Strategy (FAS) through the NERL Licence.

Cost Efficiency

10. The cost efficiency KPA includes two KPIs - the determined unit cost (DUC) for en route ANS; and the DUC for terminal ANS. 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 3.3% and the real DUC of 5.3%.

Figure 5: En route cost efficiency target UK

	2015	2016	2017	2018	2019
DC nominal (£000)	£685,846.2	£685,886.2	£687,735.7	£679,153.6	£668,154.5
Inflation index	107.2	109.2	111.4	113.6	115.9
DC real (£000)	£639,913.2	£628,018.8	£617,364.2	£597,706.3	£576,496.5
Total Service Units (000)	10,036	10,262	10,455	10,682	10,912
Real DUCs	£63.76	£61.20	£59.05	£55.95	£52.83

11. The proposed UK target for en route cost efficiency (5.3% DUC reduction pa) is significantly more challenging than the EU wide target (3.3% DUC reduction pa).

Figure 6: Terminal cost efficiency target UK (zone B)

	2015	2016	2017	2018	2019
DC nominal (£000)	£137,747.7	£140,750.6	£144,433.4	£147,588.3	£150,597.1
Inflation index	105.35	107.24	109.28	111.37	113.58
DC real (£000)	£130,757.4	£131,245.6	£132,168.3	£132,518.8	£132,589.0
TSU (000)	1125	1154	1175	1200	1225
Real DUCs	£116.27	£113.71	£112.44	£110.44	£108.23

12. 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 proposes to once again, deliver on cost-efficiency targets, resulting in a cumulative reduction in the unit rate since 2012 of 12.7%.

13. The Irish cost efficiency targets are set out in Figure 7 and 8.

Figure 7: En route cost efficiency target Ireland

	2015	2016	2017	2018	2019
DC nominal (€000)	€119,009.4	€122,178.4	€126,269.5	€129,890.4	€131,201.7
Inflation index	105.1	106.7	108.4	110.1	111.8
DC real (€000)	€113,234.4	€114,506.5	€116,484.8	€117,974.9	€117,353.9
Total Service Units (000)	3,990.0	4,090.0	4,180.0	4,276.0	4,370.0
Real en route DUCs	€28.38	€28.00	€27.87	€27.59	€26.85

Figure 8: 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	105.1	106.7	108.4	110.1	111.8
DC real (000)	€23,410.3	€24,487.4	€24,799.5	€25,128.3	€25,266.9
TSU	142,200	147,200	152,800	158,800	164,400
Real DUCs	€164.63	€166.35	€162.30	€158.28	€153.69

Consultation

14. The deadline for representations on the draft PP (in the official EU template) and this consultation document is 4 April 2014. A stakeholder consultation meeting to support the process will be held on 14 March 2014 in London.

15. Following the consultation of the draft PP, the Civil Aviation Authority (CAA) and the Irish Aviation Authority Safety Regulation Division (IAA SRD) will develop a final Performance Plan (PP) for adoption by the UK and Irish governments and submission to the European Commission and the Performance Review Body (PRB) by 30 June 2014. In November 2014 the European Commission will notify Member States on whether the Plans are assessed to be consistent with and make adequate contribution to the EU-wide targets for RP2.

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 stakeholder consultation on the draft UK-Ireland Performance Plan (the PP for Reference Period 2 (RP2, 2015 – 2019) of the Single European Sky (SES) Performance Scheme for Air Navigation Services (ANS).

1.2 It is intended to act as a guide to the formal template of the draft PP. This document provides supporting rationale for the decisions and targets contained therein. Details on the military dimension, actions to implement the Network Strategy Plan, air navigation service providers' (ANSP) 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.

Views invited

1.3 Any comments and responses to this consultation should be sent, by e-mail, to the UK-Ireland address: UK-IrelandPerformancePlan@caa.co.uk by 4 April 2014. Alternatively, comments may be sent by post to:

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1.4 The CAA and IAA SRD expect to make responses to this consultation available online for other interested parties to read, as soon as practicable after the period for written comments closes. Any material that is regarded as confidential should be clearly marked as such. Please note that the CAA has powers and duties with respect to information under section 102 of the Transport Act 2000 and the Freedom of Information Act 2000.

Structure of the remainder of this document

1.5 The remainder of this document is structured as follows:

- Chapter 1: Introduction
- 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
- 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: Abbreviations

1.6 In addition, the CAA and IAA SRD are publishing the draft PP 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 to date 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[1] with detailed requirements contained in two implementing regulations (the Regulations) published in May 2013 in preparation for RP2:

[1] 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-

- Commission Regulation No 390/2013 laying down a performance scheme for air navigation services and framework functions[2] - the Performance Regulation; and
- Commission Regulation No 391/2013 laying down a common scheme for air navigation services[3] - 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 draft PP for consultation.

2.6 The Regulations provide for financial incentives for capacity (mandatory), environment (optional) and cost-efficiency (mandatory, but embedded into the Charging Regulation). There are no financial incentives on 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 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 the delivery of performance improvements under the four SES KPAs. FAB actions during RP2 will take the form of setting and achieving some targets at the FAB

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

[2] 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

[3] 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

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, planned to start in 2016. During 2015 the IAA will adapt its COOPANS system to 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 infringement proceedings on the FAB. In the Implementation Plan, which is currently under consideration by the Commission, 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 through within the concept of 'design and build'.

2.18 Therefore during RP2 the FAB is committed to looking within 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 in mid-2014.

Scope

2.19 The draft 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.

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 draft 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 Metrological Office, the relevant NSA costs of the CAA and IAA SRD, and the national shares of EUROCONTROL agency costs.

2.23 The draft 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[4].

Process

2.24 The NSAs are required to draw up performance plans at FAB level, supported by ANSPs providing their business plans, and stakeholders consultation on plans. See details on the development of the ANSPs' business plans in Appendix A.

2.25 This consultation document and the draft PP are intended to support this consultation. Stakeholders are invited to provide written comments on this document and the draft PP by 4 April 2014. This period of written consultation will be supported by a stakeholder consultation meeting on 14 March 2014.

EU-wide targets

2.26 EU targets for RP2, were adopted by the Single Sky Committee (SSC)[5] on 4 February 2014, and will be published in the Official Journal of the European Union in due course.

Next steps

2.27 There are a number of steps before the PP comes into force:

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

[5] The Single Sky Committee is the comitology body for the purposes of the Single European Sky legislation.

- 19 February 2014: Publication of this draft UK Ireland Performance Plan for the period 2015 – 2019 for formal stakeholder consultation. Consultation will close on 4 April 2014.
- 14 March 2014: Stakeholder consultation meeting in London.
- May/June 2014: Following consultation of the draft PP, the CAA and IAA SRD will submit an appropriately amended final joint FAB Plan to the UK's Department for Transport (DfT) and Ireland's Department for Transport, Tourism and Sport (DTTAS) for formal adoption at the State level.
- June 2014: Member States are required to submit their Performance Plans to the Commission and the PRB.
- 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.
- 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

2.28 The Gross Domestic Product (GDP) assumptions underpinning the traffic forecast are those used by STATFOR, based on the August 2013 update of the Oxford Economics Ltd forecasts (OEF). These suggested a relatively high GDP growth rate of 2.7-2.8% per annum over the medium term. Although the latest OEF (Jan 2014) forecast over the medium term has reduced slightly to 2.5-2.6% level, it still appears to be at the top end of a range of independent forecasts. The CAA believes that using the average of the HM Treasury comparison of independent forecasts for the UK economy published in Nov 2013 would represent a more credible forecast over the medium term (which is available up to 2017). Beyond

that, the CAA believes 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.

2.29 On the other hand, the short term economic outlook for UK has improved significantly since August 2013 with the latest OEF (January 2014) forecast of 1.9% and 2.6% for 2013 and 2014 respectively.

Figure 2.1: GDP growth UK

GDP growth (%)	Actual			Forecast						
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
OEF (Aug 2013)	1.7	1.1	0.2	1.2	2.0	2.4	2.7	2.8	2.7	2.7
OEF (Jan 2014)	1.7	1.1	0.3	1.9	2.6	2.4	2.6	2.6	2.5	2.6
HM Treasury	1.7	1.1	0.3	1.9	2.7	2.4	2.4	2.3	2.3*	2.3*

Source: OEF, 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.

2.30 NATS updated Revised Business Plan (RBP) and financial model were based on inflation assumptions consistent with the International Monetary Fund (IMF) September 2013 forecast (published in mid October 2013). As with previous version 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) and RPI inflation forecasts.

Ireland

2.31 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

2.32 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

2.33 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.

2.34 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.

2.35 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.

Table 2.2: 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: taken from IMF World Economic Outlook October 2013

Traffic assumptions

UK

2.36 The UK traffic forecasts in the draft PP are those published by STATFOR in September 2013 (base case)[6]. It is important to note that the final PP will be updated to reflect traffic forecasts from the February STATFOR forecasts, in accordance with the Performance Regulation.

Figure 2.3: Traffic forecast UK

	2013	2014	2015	2016	2017	2018	2019
Overall UK flights (000)	2,223	2,253	2,304	2,354	2,395	2,444	2,493
Total service units (000)	9,680	9,817	10,036	10,262	10,455	10,682	10,912

Source: STATFOR

Ireland

2.37 The traffic forecasts for Ireland as used in the draft PP are based on STATFOR forecasts as published in September 2013. However, two adjustments have been applied to these figures.

2.38 Firstly, rather than use the base case traffic forecast, or the low case which was used in the decision on EU-wide targets, the mid-point between these two cases has been used as a first adjustment - whereas the base case appears optimistic, showing growth rates which are well above what has

[6] Eurocontrol Seven Year Forecast: 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.

been achieved in recent years, the low case on the other hand seems overly pessimistic.

2.39 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.

2.40 Inputs into forecasts need to take into account sensible 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.

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

Figure 2.4: Traffic forecast Ireland

	2015	2016	2017	2018	2019
Total service units (000)	3,990	4,090	4,180	4,276	4,370

Source: STATFOR, IAA SRD adjustments

Status of Aviation Safety

2.42 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, Air Accident Investigation Branch, Ministry of Defence (MoD) and Air Safety Support International[7]. 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[8].

2.43 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 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.

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

2.45 The State Safety Plan[9] is a rolling 3 year plan that was first produced in 2010 and is reviewed annually. The latest update covering the period

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7 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

8 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

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

2013-2016 is available on the IAA website.

2.46 The Annual Safety Performance Review[10] describes the performance of the aviation system in Ireland, including ANS.

2.47 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

2.48 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.

2.49 En-route services in the UK are provided by 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.

2.50 A separate NATS subsidiary, NATS Services Ltd (NSL), is a major player in the market for terminal ANS and currently provides them at 15[11] UK airports under contract to the owner/operator. However, the terminal approach component of the London Approach Services is provided by NERL under licence.

2.51 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 are in the course of being purchased by Universities Superannuation Scheme Limited (USS) a pension fund unrelated to the

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

[11] ANS at Birmingham will be provided by NSL until the end of 2015; for the remainder of RP2 it will be provided by Birmingham Air Traffic Limited.

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.

2.52 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.

2.53 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.

2.54 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 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 SRD 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 airspace controlled by Ireland. 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 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 draft PP sets out the following FAB targets:

- by 31 December 2019 at the latest, NSAs shall achieve at least Level C[12] for all management objectives ('safety policy and objectives', 'safety risk management', 'safety assurance', 'safety promotion' and 'safety culture');

[12] 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.

- by 31 December 2019 at the latest, ANSPs shall achieve at least Level D 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'.

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

3.4 The draft 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)[13];
- 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.

[13] The categories AA, A, B, C, D and E are defined as acceptable means of compliance and guidance material from EASA for the implementation and measurement of safety KPIs as referred to in Article 7 of the Performance Regulation.

KPI #3: Just Culture

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

'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;

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

3.7 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.

3.8 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.

Targets

3.9 In a continuing effort to promote and operate within JC principles and processes, the UK and Ireland NSA's have agreed to set the following Just Culture FAB targets for both NSA's and participating ANSP's for Reference Period 2.

3.10 NSA - Target:

- The UK and Irish NSAs will ensure that JC training is cascaded from the leadership level throughout the FAB organisation. Training will be focused on appropriate senior management staff and ATM/ANS oversight staff, with particular focus on those personnel required to undertake 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. The NSAs will ensure that this training is maintained on an on-going basis by including the requirement for JC training within their documented staff training and induction programmes.

3.11 ANSP - Target:

- The FAB ANSPs will ensure that JC training is cascaded from the leadership level throughout the ANSP organisation. Particular focus will be placed on the training of appropriate senior management staff and those personnel required to undertake safety occurrence 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 JC training objective will be achieved through open engagement across a mix of seniority, specialism and nationality.
- The ANSPs will ensure that this training is maintained on an on-going basis by including the requirement for JC training within their documented staff training and induction programmes.

3.12 The training will be completed throughout the life-cycle of RP2 with delivery of significant progress demonstrated by 2017. The training shall 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.

3.13 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.

3.14 NSAs and ANSPs will review the annual EASA JC questionnaires with a view to identifying areas of improvement at FAB and/or national level.

Consultation questions

3.15 The NSAs of UK and Ireland would appreciate stakeholder views on the following questions:

- What would your organisation consider to be the safety benefits in having a documented policy on JC at FAB level?
- Is the scope of the Joint Policy Statement sufficient?

- Are the JC targets on training at NSA and ANSP level considered an appropriate recognition of JJC and sufficiently ambitious within the FAB context?
- Are there other areas of JC you consider would be helpful in establishing a greater understanding of its application in relation to ATM throughout RP2?

Chapter 4

En Route Capacity

SES Requirements

4.1 The Performance Regulation requires that the capacity target be set at FAB level with a breakdown 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, excluding exceptional events; 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 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 and 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[14] that the 1% maximum amount of aggregate bonuses/penalties applies individually to each the capacity and the environment KPAs.

FAB Target

4.5 The draft PP proposes a FAB-level en route capacity target as set out in Figure 4.1 below[15]. This is compared to the EU wide target and the reference values prepared by the EUROCONTROL as a breakdown of the EU-wide target by FAB.

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	0.28	0.29	0.29	0.29	0.28
FAB Target	0.28	0.28	0.28	0.28	0.28

Source: CAA, IAA SRD

4.6 The UK and Ireland propose to set a FAB target which is constant at 0.28 minutes/flight through the period rather than fluctuating between 0.28 and 0.29. This will reflect the reference value at both the beginning and end of the reference period.

Allocation to ANSPs

4.7 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)	For each year 2015 - 2019
UK	0.254
Ireland	0.150

Source: CAA, IAA SRD

UK

4.8 The CAA has decided to keep the UK allocation of the FAB capacity target in RP2 consistent with the FAB reference value. NERL has however set

[14] Commission/PRB workshop on incentives - 12 November 2013.

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

itself more testing targets based on:

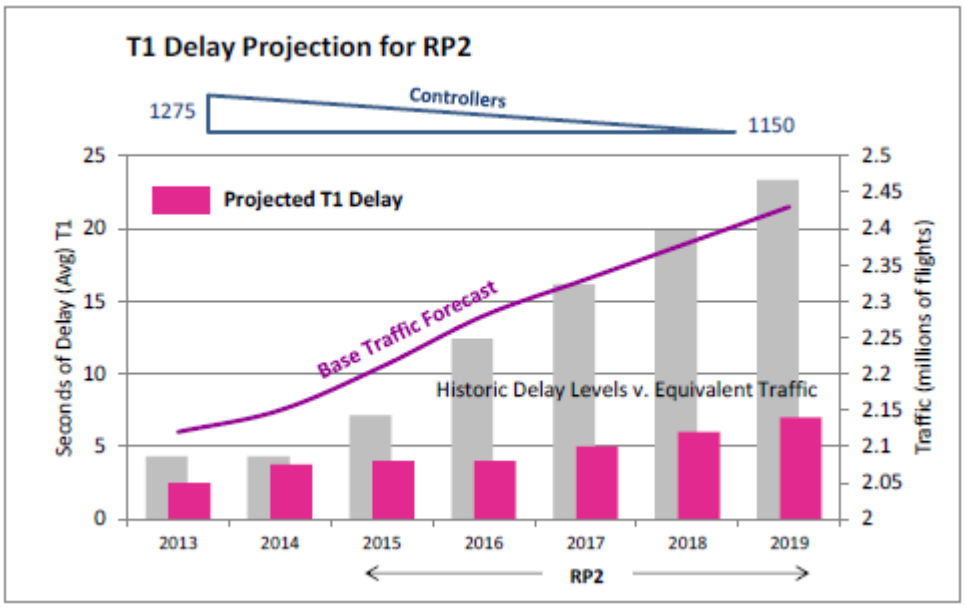
- forecast traffic volumes not reaching previous (2007) peak levels until beyond 2019, so that the ATC system has sufficient structural capacity for RP2 in terms of airspace sectors (based on current traffic patterns);.
- a strategy to ensure that this capacity is used efficiently;.
- optimised airspace 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.

4.9 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.

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

Figure 4.3: NERL Expectations of en route delay in RBP[16]



Source: NERL

4.11 The CAA has decided not to take account of these more testing projections in the UK contribution to the KPI target but has applied them (adjusted to take account of differences in measurement) in determining the thresholds for the payment of bonuses in the additional UK incentives below.

IRELAND

4.12 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.

4.13 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 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.

4.14 Figure 4.4 shows the capacity plans from Local Single Sky Implementation

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

(LSSIP) 2012 (latest available figures). The plans show that for Dublin Area Control Centre (ACC) no increase in capacity is expected. For Shannon ACC a small increase in capacity is foreseen, but this increase is mainly linked to normal recruiting processes, as well as FAB initiatives which have a wider objective (cost efficiency, flight efficiency) and are not specifically aimed at increasing capacity. Additionally, 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: Capacity plans from LSSIP 2012

	Dublin ACC		**Shannon ACC**	
	Measures planned	Expected capacity increase	Measures planned	Expected capacity increase
2015	Common transition altitude for UK/Ireland FAB	0%	High-level en-route sectorisation at FAB level Common transition altitude for UK/Ireland FAB	3%
2016	-	0%	-	3%
2017	-	0%	-	3%
Continuous	Ongoing recruitment to maintain staff levels Developing Queue Management programme UK/Ireland FAB initiatives			

Source: LSSIP 2012

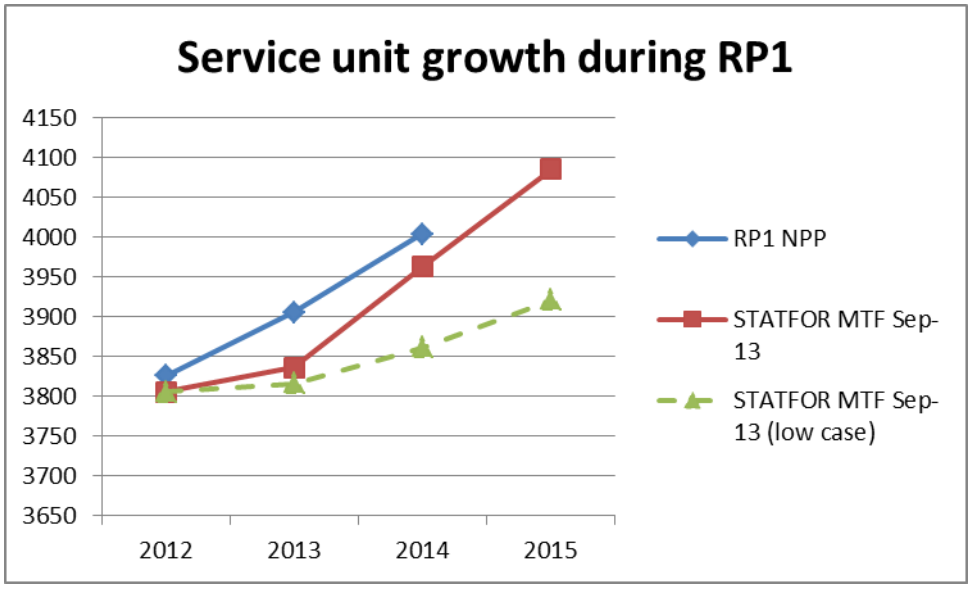
4.15 Given forecast traffic growth over RP1, a small increase in delays had been foreseen for the first reference period as a result of the chosen approach. The cost of any increase in delay would have been outweighed by the cost of further investment to maintain zero delay. Since the forecast traffic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

4.16 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 the first years of RP2 could reasonably be below the proportion of 0.15. However, since traffic is expected to increase further during RP2, and for reasons of consistency, 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.

4.17 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 latest STATFOR data from September 2013 (which means that 2012 data is actual information, and 2013 data is based partly on actual data). 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. Also, since an adjusted mid-point traffic forecast is used for RP2, which puts traffic roughly halfway between STATFOR base and low cases, the traffic forecast for 2015 is now very close to the RP1 forecast for 2014 (in thousands of service units, 3,990 and 4,004 respectively).

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



Source: IAA SRD

Incentive Mechanisms

4.18 The UK and Ireland propose a common incentive mechanism to apply to ATFM delay per flight.

4.19 The UK proposes to also apply 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.

4.20 Ireland proposes 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 proposes that the maximum penalty or bonus would 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

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

- incentives would be calculated on a calendar year basis and be paid in year n+2;
- no bonus would be payable to either NERL or the IAA for a relevant year unless the FAB target for that year had been met and similarly no penalty would be payable unless the FAB target for that year had been missed;
- the calculation of performance would be as for the KPI target for capacity except that it would 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

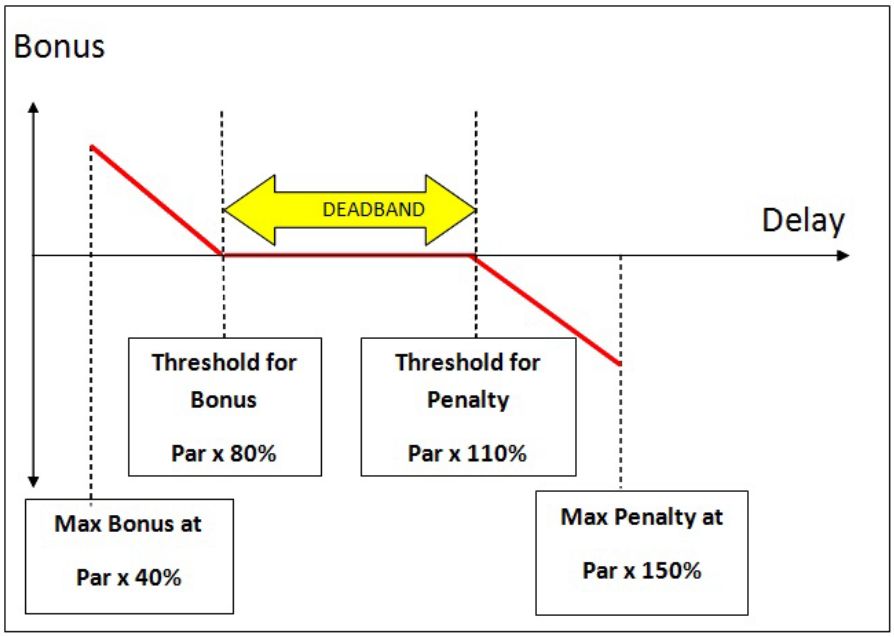
Regulation Cause	NM Code	Regulation Location	Examples	IATA Code	IATA Delay Cause
ATC Capacity	C	En route	Demand exceeds capacity; Planned staff shortage	81	ATFM due ATC En route Demand/Capacity
ATC Routings	R	En route	Phasing in of new procedures; ATFCM scenarios, Network Solutions	81	ATFM due ATC En route Demand/Capacity
ATC Staffing	S	En route	Unplanned staff shortage	82	ATFM due Staff/Equipment En

Regulation Cause	NM Code	Regulation Location	Examples	IATA Code	IATA Delay Cause
					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 would 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 has exceeded their local target “dead band”, then each ANSP will have bonuses or penalties applied at the rates above.
- there would 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 would 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 would 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

4.22 The target values for the capacity KPI need to 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	0.254	0.050	0.204	0.163	0.224
IAA	0.150	N/A	0.150*	0.120	0.165

* based on ANSP attributable delays only as listed in table 4.2 above.

Source: CAA & IAA SRD

Additional UK Incentives

4.23 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

4.24 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.

4.25 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 incidences in 2011 or 2012 generating maximum bonuses. The metric in 2013 was completely dominated by major ATFM delays on 7 December which implied a significant penalty.

4.26 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.

4.27 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.)

4.28 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 50 days for the period of RP2 taken as a whole.

4.29 The CAA considered an argument by NERL 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.

4.30 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's

obligation to supply under Condition 2 of its licence and the potential consequences of a breach should be sufficient to stop NERL from pursuing such a course.

4.31 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)[17] 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.

4.32 The CAA is mindful that the existing rates of bonuses and penalties are low and may not be sufficient to outweigh the costs of increasing capacity to avoid the relevant delay. The CAA is therefore proposing:

- 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[18];
- A penalty rate for C3 equal to the bonus rate;
- A penalty rate for C4 equivalent to that applied in RP1 adjusted for inflation.

4.33 These will be 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.

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

[18] This was calibrated for 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.

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%

4.34 Further details of C3 and C4 are provided in Appendix C.

Consultation questions

4.35 The NSAs of UK and Ireland would appreciate stakeholder views on the following questions:

- Do you consider the adoption of a FAB capacity target in line with the Network Manager Reference Values for the UK-Ireland FAB appropriate?
- Do you consider the scope and function of the proposed FAB capacity incentive mechanism appropriate?
- Do you consider the weighting of capacity incentives on NERL appropriate?
- Do you consider the proposed approach to incentivisation for the capacity metric C4 appropriate?
- Do you have any other views on the FAB or UK-only capacity targets?

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 of the actual trajectory, 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;
- '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 allow but do not require a financial incentive for the environmental KPA in RP2.

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 route free. 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 it within 40 NM 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 section 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 achieving additional flight efficiencies would prejudice greater gains elsewhere;
  - The scale of flight efficiency benefits (including vertical trajectories and benefits within 40NM of airports) generated since the start of RP2.
- 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 route free. 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 route free, 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.

Use of 3Di metric in RP1

5.10 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 vertical flight efficiency components.

5.11 Figure 5.2 below shows the 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

5.12 For RP2, the model will be re-estimated 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, including the potential removal of those interaction terms from the model if they do not add substantially to the predictive capability of the model, and do not appear to be robust over time.

5.13 In order for incentives on 3Di 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 3Di value.

5.14 At this early stage in the target-setting process, there are a number of pending changes NATS wish to make which should help to improve the accuracy of the 3Di model. In order to balance the need for a consistent methodology throughout the RP2 period with the most up-to-date model which makes use of the best available information, it is proposed that for this document, initial targets will be set based on the RP1 model and outputs. NATS will continue current work on developing a revised model (with new coefficients) by 15 April 2014. This revised model will then be used to reset the RP2 targets with the intention that the targeted performance trajectory will be equivalent to that set out here. The absolute levels are expected to change, due to the increased accuracy of measuring various aspects of the model inputs. However, the revised targets will be set 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 here.

5.15 If NATS wish to make further measurement or methodological changes after 15 April 2014, 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.

5.16 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) will indicate whether the change has a material impact on the 3Di metric estimated.

5.17 The Annual Review process tests the robustness of the defined regulatory model. This review requires NATS to use a sample of 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 3Di

score for the year. If this generates a 3Di score which when compared to that reporting, is outside these boundaries, 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).

5.18 Initial par value targets and "deadbands" have been set on an annual basis as per Figure 5.4 below. These values will be revised following the final model calibration by 15 April 2014, but final values will aim to target the same levels of performance and improvement across the period.

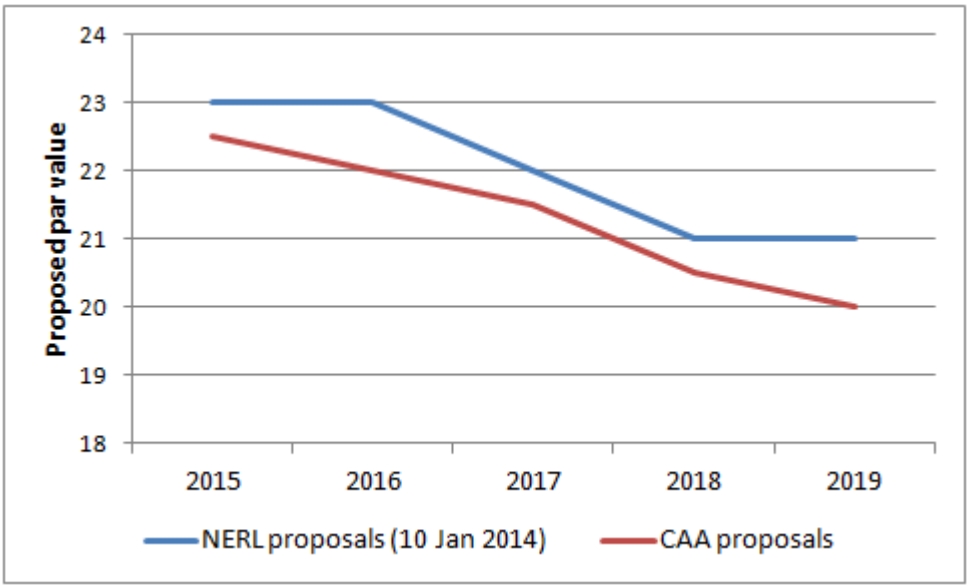
5.19 The initial targets have been set based on:

- review of the 3Di performance in RP1 for 2012 and 2013 under the previous model;
- a reflection of forthcoming operational improvements which should generate fuel savings for customers.

5.20 The performance improvement trajectory has been considered in the light of expected improvements in fuel efficiency and initial forecasts 3Di profile as set out by NATS in their January 2014 proposals. Alongside the par value reductions, the deadbands have been stated as proportionate to the par value to ensure they maintain appropriate targets at lower levels of the 3Di metric.

5.21 The Annual Review process will reflect this revised approach to the deadbands too, and the RP1 "knockout" of +/- 3 (i.e. within 3Di units of the par value for the year) will be replaced by +/- 12.5% (of the par value 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. With par values reducing substantially over RP2, it is appropriate to redraw this test with a % "knockout" parameter.

Figure 5.3: Proposed 3Di par value improvement trajectory



Source: NERL Proposals for RP2 En-route Capacity and Environment Targets and Incentives, 10 January 2014

Figure 5.4: Regulatory targets for 3Di-equivalent in RP2

	Par value	Annual change in par value	% annual change in par value	Dead band	Lower bound	Upper bound
2015	22.5	-0.5	-2.2%	+/- 10%	20.25	24.75
2016	22.0	-0.5	-2.2%	+/- 10%	19.80	24.20
2017	21.5	-0.5	-2.3%	+/- 10%	19.35	23.65
2018	20.5	-1.0	-4.7%	+/- 10%	18.45	22.55
2019	20.0	-0.5	-2.4%	+/- 10%	18.00	22.00

Source: CAA

5.22 The initial par values set out in this table are to demonstrate the targeted improvement in performance, and the absolute levels will be subject to the final formulation of the model.

5.23 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.

5.24 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, as calculated in Figure 5.5 below (not all figures

are based on the initial par values, which are subject to revision in April 2014, whilst maintaining equivalent performance targets):

Figure: 5.5 Proposed maximum bonus and penalty limits (to be recalibrated with new model in April 2014)

	Par value	Lower dead band, -10%	Upper dead band, +10%	Max bonus level ('cap'), -33%	Max penalty level ('collar), +33%	Bonus/penalty per unit 3Di outside of deadband
2015	22.5	20.25	24.75	15.00	30.00	R/5.25
2016	22.0	19.80	24.20	14.67	29.33	R/5.13
2017	21.5	19.35	23.65	14.33	28.67	R/5.02
2018	20.5	18.45	22.55	13.67	27.33	R/4.78
2019	20.0	18.00	22.00	13.33	26.67	R/4.67
Note: R = revenue at risk = 1% of NERL's en route revenue from user charges						

Source: CAA

Future environmental incentives

5.25 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.

5.26 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

5.27 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.

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

5.29 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.

5.30 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 February 2016.

Incentive mechanism

5.31 For the first two years of RP2, NERL will be eligible for a bonus for performance resulting in a 3Di score lower than 20.25 in 2015, and 19.80 in 2016; or a penalty for performance where the 3Di score exceeds 24.75 in 2015, and 24.2 in 2016. 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.

5.32 From 2017 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. Furthermore, NERL will be liable to pay penalties equal to 1% of its en route revenue from user charges for 2017 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 2017, NERL will be subject to the bonus and penalty mechanism described above for the years 2017,

2018 and 2019.

5.33 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, the incentive penalty mechanism associated with a harmonised TA of 18,000 ft shall not apply.

UK FAS Incentive

5.34 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.

Consultation questions

5.35 The NSAs of UK and Ireland would appreciate stakeholder views on the following questions:

- Do you consider adoption of the Network Manager Reference Values as FAB targets for the horizontal flight efficiency appropriate for RP2 in the UK-Ireland FAB?
- Do you consider the approach to incentivisation for the proposed UK 3Di KPI and implementation of a harmonised Transition Altitude of 18,000 ft appropriate?
    - Do you consider the proposed 'cap' and 'collar' calculation as 33% of the par value an appropriate level at which to set the maximum bonus/penalty payments?
    - Do you consider the deadband proposed to be at an appropriate level?
- Do you have any other views on the FAB or UK-only environment targets?

Chapter 6

En Route Cost Efficiency UK

Introduction

6.1 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 en route service units, expected during the period in the performance plan.

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

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

NERL

6.3 In October 2013 NERL issued a revised business plan (RBP). This followed a process of customer consultation, mandated by the CAA, and took account of the agreed positions between NERL and users[19]. Subsequent to this:

- NERL has provided 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;
- users have provided an "RP2 Airline Community Special Interests Paper" further elaborating on issues identified at the end of customer consultation on issues where they hold different view to NERL;
- the CAA has received consultants studies which it had commissioned on:
  - non-staff operating expenditure (opex);

[19] RP2 Customer Consultation Working Group - Report from Co-Chairs

- staff opex;
- pensions;
- the cost of capital;
- capital expenditure (capex);
- cost allocation[20].

6.4 The CAA has taken all of the above into account in developing the following assumptions which underpin the draft performance plan in respect of NERL.

6.5 The analysis starts from an overview of NERL's RBP, sets out the CAA proposals to make changes in various building blocks based upon this evidence and then draws together the effects of these changes on the DC and DUCs. The commentary is in 2012 prices so that it is reconcilable to the NERL business plan.

Scope

6.6 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.

Figure 6.1: 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

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

6.8 NERL provides a service for traffic using the five main airports in the

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

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's has published its reasoning for its conclusions from this consultation alongside the draft PP[21]. 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.

6.9 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

6.10 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 for this that covers a contribution to infrastructure costs only and not the staff costs of providing the service. The approach to calculating the 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.

6.11 However, to make the presentation of DC and service units (SUs)

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

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.

NERL's October 2013 RBP

6.12 NERL's RBP in October 2013 set out the components of determined costs as set out in Figure 6.2.

Figure 6.2: Components of the Determined Costs in the RBP

2012 CPI prices £m	2011 actual	2012 actual	2013 plan	2014 plan	2015 plan	2016 plan	2017 plan	2018 plan	2019 plan		CP3 Total	RP2 Total
Staff & direct underlying costs	329	319	316	310	304	305	305	306	303		1,273	1,521
Cash pension contribution - defined benefit	88	92	89	84	71	70	70	69	67		353	347
Cash pension contribution - defined contribution	1	2	3	4	4	5	6	6	7		9	28
Exceptional costs & costs of service to NSL	16	15	34	27	23	20	20	21	20		92	103
Operating cost contingency	-	-	5	6	6	6	6	6	6		11	31
Depreciation of the RAB	140	149	172	175	176	174	168	159	153		635	830
Regulatory return (inc tax)	81	79	78	76	73	67	61	57	53		314	311
Other revenues	(92)	(91)	(93)	(94)	(92)	(92)	(90)	(87)	(88)		(369)	(448)
Total	592	565	604	589	565	554	546	537	521		2,320	2,723

Source: NERL RBP

6.13 NERL presented the effect on the DUC as set out in Figure 6.3.

Figure 6.3: Derivation of DUC: RBP October 2013

2012 CPI prices £m	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**		**RP2**
Determined costs		565	554	546	537	521		2,723
Less: pensions pass through CP3		(1)	(1)	(1)	(1)	(1)		(6)
Less: costs of change		(8)	(8)	(5)	(4)	(5)		(31)
Adjusted determined costs		**555**	**545**	**540**	**531**	**515**		**2,686**
Traffic forecast '000 SUs		9,789	10,068	10,306	10,579	10,856		
Determined Unit Cost £		**56.72**	**54.12**	**52.36**	**50.22**	**47.42**		
Cost of capital factor		0.967	0.903	0.844	0.789	0.738		
NPV of determined costs		537	492	456	419	380		2,284
Start point £	62.57							
Profiled DUC £		**58.78**	**55.23**	**51.88**	**48.74**	**45.79**		**6.1%**
Profiled determined costs		575	556	535	516	497		
Cost of capital factor		0.967	0.903	0.844	0.789	0.738		
NPV of determined costs		556	502	452	407	367		2,284

Source: NERL RBP

6.14 In presenting the DUC, NERL made the following adjustments consistent with earlier guidance from the CAA:

- it subtracted the small element of the DC represented by carrying forward pension variances from earlier reference periods:
- it adjusted to subtract the structural "costs of change" in RP2; and
- for the purposes of cost efficiency measurement, NERL profiled the DUC so that the percentage reduction was equal in each year, and the present value of charges, when discounted at the cost of capital, was the same as for the unprofiled DUC.

6.15 On this basis the plan implied a reduction in the DUC compared with the start point as then implied by proposals by the PRB of some 6.1% per year. It should, however, be noted that if the DUC were not profiled then the DUC would only come down to £47.42 compared to the starting point of £62.57, and the reduction would come down to 5.4% p.a. (the arguments for and against profiling are set out in paragraph 6.49 below). If, in addition, the costs of structural change were not netted off (because they are expected to be recovered by users in full during RP2 anyway) the reduction in the DUC would come down further to 5.2%.

Further Updates Made by NERL Since October

6.16 NERL has proposed the following updates to the RBP in December to to reflect:

- revised lower opex projections in 2013 and 2014 (with an increase in DC in the early years of RP2 through the rolling incentive mechanism;
- revised projections of CPI and RPI;
- revised STATFOR traffic projections in September 2013 (this does not affect the DC but affects the DUC);

6.17 Together these add £16million to the DC in aggregate over the RP2 period.

Figure 6.4: Effects of NERL further adjustments since the RBP

	2015	2016	2017	2018	2019	Total
RPB	555.1	545.0	539.4	531.3	514.7	2,685.6
Further updates	4.0	5.9	5.1	1.2	-0.2	16.0
RBP with further updates	559.2	550.9	544.6	532.4	514.6	2,701.6

Source: NERL RBP and CAA analysis

Costs of change

6.18 As discussed with NERL, the CAA proposes that, for the purposes of assessing cost efficiency, costs of change are added back to the DC on the basis that:

- NERL was not proposing to recover these costs over a longer period than RP2;
- they may not qualify as restructuring costs under 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.

Staff Costs

Staff Numbers

6.19 NERL projected the numbers of staff set out in Figure 6.5 in its RBP.

Figure 6.5: 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:

6.20 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 have 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.

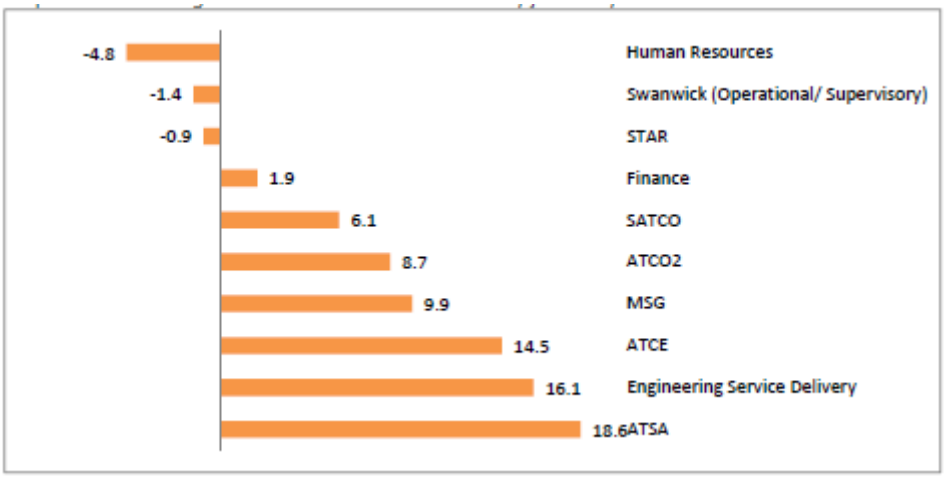
Unit Staff costs other than defined benefit pensions

6.21 IDS, the CAA's consultants on staff costs, provided a significant body of 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.

6.22 Figure 6.6 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 6.6: 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[22]

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

Figure 6.7: 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

6.23 In the RBP, NERL assumed that pay rates would increase over RP2 by CPI+0.25% p.a. with a further increase in pay due to pay progression of 0.30% p.a.

6.24 The CAA considers that based on the analysis in the IDS report, that the pay and benefits packages at NERL are relatively generous compared to appropriate comparators and that recent trends have 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 has therefore made no allowance for a general upward drift in salaries in each category of staff due to increments and would assume a steady state where the average seniority of staff remains stable.

6.25 This does not mean that the CAA is proposing to impose any cap on pay either collectively or for particular types or grades of staff. The CAA believes that it is not for the regulator to micro-manage the business but it would follow that if NERL does elect to offer more than this allowance in total it would do so either from additional efficiency savings elsewhere or at the expense of its shareholders.

Figure 6.8: Proposed Amendment to RBP for Staff Costs

	2015	2016	2017	2018	2019	Total
RBP	206.8	205.6	206.3	207.8	208.4	1034.9
Draft PP	205.7	203.7	203.3	203.6	202.9	1019.2
Difference	-1.1	-1.9	-3.0	-4.2	-5.5	-15.7

Source: NERL RBP and CAA analysis

Pensions

6.26 Pensions (and in particular defined benefit DB pensions) represent a significant portion of NERL's staff costs.

6.27 The CAA considers that NATS has made 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 but it considers that NERL should continue to have an incentive to mitigate liabilities and the future contributions which ultimately come from users.

6.28 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 stewardship of the scheme, valuations, and additional liability management options. These are discussed in detail in Appendix D.

6.29 Based on these studies and its own analysis the CAA proposes that it would be reasonable for NERL to bear at least 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 determined costs 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.

6.30 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 6.9: Proposed Amendment to RBP for DB Pensions[23]

	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

Other operating costs

6.31 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 for 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.

6.32 There is, however, one area which seem to the CAA to be anomalous. The Employee Share Scheme costs at about £3 million p.a. appear 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.

6.33 The CAA does not consider that accruing additional value to eventually redeem shares in 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 seems reasonable for it to be financed from shareholder funds. It also considers 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.)

6.34 If indeed there are net costs from the scheme in RP2, the CAA considers that these should be absorbed by shareholders or out of the overall staff remuneration allowance.

6.35 The CAA is therefore proposing to exclude this element of cost from the plan.

Figure 6.10: Proposed Amendment to RBP for Employee Share Scheme Costs

£m	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
Difference	-2.1	-2.9	-2.8	-2.6	-3.0	-13.3

Source: NERL RBP and CAA analysis

Contingency

6.36 NERL included an allowance of c. £6million p.a. for operating expenditure over RP2. NERL has argued for this provision on the basis that:

- the opex forecast include unsecured savings which are stretching, unproven and uncertain;
- the opex forecast do not include allowances for some expected costs;
- there is less scope for unforeseen cost savings on the upside than there was in RP1;

- their approach is not to include contingency in line items and that this transparent approach is best and one that the CAA has accepted previously; and
- its plan had been drafted in the expectation that contingency could be shown separately and that the downward pressure on individual items was more rigorous than they would otherwise have been.

6.37 Users also raised this issue as part their Special Interests submission arguing that most of the cost savings were expected to be delivered at the latter end of RP2 and that any contingency provision should be very much lower.

6.38 The CAA 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 comfortably outperformed the expected level of opex in the plan even before the contingency provision. The CAA notes that NERL has identified potential areas for additional costs but also recognises that there may also be opportunities for additional savings which will only become apparent in the course of RP2. As a matter of general regulatory best practice, the CAA 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.

6.39 The CAA therefore proposes not to allow any of this contingency in the DC for RP2.

Figure 6.11: Proposed Amendment to RBP for contingency

£m	2015	2016	2017	2018	2019	Total
RBP	4.8	6.3	6.1	6.0	5.9	29.1
Draft PP	0	0	0	0	0	0
Difference	-4.8	-6.3	-6.1	-6.0	-5.9	-29.1

Source: NATS RBP, CAA

Capex

6.40 The CAA has adopted the projections for capex set out in the RBP of £541 million over RP2 (in 2012 prices[24]). This breaks down into the

[24] The RBP also sets out a figure of £575 million in 2012 prices which includes Oceanic and

major programmes as shown in Figure 6.12 below.

6.41 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.

6.42 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).

non regulatory asset base investment.

Figure 6.12: Summary of capex programme (Nominal Prices)[25]

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	60.0	9.9	8.9	7.2	6.9	9.3	42.2
LAMP	67.9	5.6	7.5	7.5	4.3	0.0	25.0
Centre Systems Software Development	212.6	57.2	47.7	29.5	31.8	28.3	194.5
CNS Infrastructure	133.1	19.6	19.8	26.9	23.0	13.4	102.7
CO2 and Fuel Saving	5.6	1.1	1.1	1.1	1.1	1.2	5.6
iTEC FDP/NCW	226.0	35.2	38.8	31.5	31.5	32.7	169.8
Sub-total of main capex above (1)	705.1	128.6	123.8	103.8	98.6	84.9	539.7
Sub-total other Capex (2)	112.0	17.4	16.0	14.6	15.3	20.8	84.1
Total capex (1) + (2)	817.1	146.0	139.8	118.4	113.9	105.7	623.8

Source: NERL

[25] Includes Oceanic and non regulatory asset base investments.

The Regulatory Asset Base and Depreciation

6.43 The explanation of these components of cost is set out in detail in the additional information accompanying the draft PP[26].

Figure 6.13: 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	180.0	180.1	173.7	160.8	153.8

Source:

Cost of Capital

6.44 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[27] . In the calculation of allowed returns, NERL used the accounting rate of return (ARR) of 6.76%[28]. The CAA commissioned PricewaterhouseCoopers (PwC) to advise on the appropriate cost of capital for NERL for RP2[29].

6.45 Based on the expert findings as well as CAA's own analysis, 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 5.75% as shown in Figure 6.14 below.

Figure 6.14: Proposed cost of capital for RP2

Percent	RP2 Proposals
Gearing	60
Pre-tax cost of debt	2.45
Total Market returns	6.25
Risk-free rate	0.75

[26] En Route Charging Zone Additional Information 1

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

[28] 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.

[29] See Appendix A for further details on consultancy studies.

Percent	RP2 Proposals
Equity risk premium	5.50
Equity beta (number)	1.115
Post-tax cost of equity	6.87
Tax uplift	36
Pre-tax cost of equity	10.73
Vanilla WACC30	4.22
Pre-tax WACC	5.75
The rate applied to the RAB	Pre-tax WACC: 5.75%

Source: CAA analysis and PwC report

6.46 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
- a comparison to other sectors.

Allowed returns

6.47 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 includes allowed returns of £264.5 million.

Figure 6.15: Proposed Amendment to RBP for allowed returns

	2015	2016	2017	2018	2019	Total
RBP	72.9	67.2	61.6	57.1	52.9	311.7
Draft PP	61.9	57.0	52.2	48.5	44.9	264.5
Difference	-11.0	-10.1	-9.3	-8.7	-8.1	-47.2

Source: NERL RBP and CAA analysis

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

Summary of adjustments

Figure 6.16: Proposed Revised Determined Cost Projections for the draft PP Summary Of adjustments

£ Million (2012 prices)	2015	2016	2017	2018	2019	Total
NERL determined costs for assessing cost efficiency (RBP)	555.1	545.0	539.4	531.3	514.7	2685.6
Adjustments October to December 2013	4.0	5.9	5.1	1.2	-0.2	16.0
Add back costs of change	8.4	7.9	5.0	4.3	5.3	30.8
Adjusted NERL determined costs	567.5	558.7	549.5	536.7	519.9	2732.4
Staff cost adjustment (excl. DB pension effect)	-1.1	-1.9	-3.0	-4.2	-5.5	-15.7
DB pension adjustment	0.0	0.0	0.0	-5.2	-6.7	-11.8
DB pensions (additional) - due to change in staff costs	-0.3	-0.6	-1.0	-1.2	-1.5	-4.6
Employee share scheme adjustment	-2.1	-2.9	-2.8	-2.6	-3.0	-13.3
Contingency adjustment	-4.8	-6.3	-6.1	-6.0	-5.9	-29.1
Cost of Capital adjustment	-11.0	-10.1	-9.3	-8.7	-8.1	-47.2
Regulatory depreciation adjustment	0.1	0.1	0.1	0.0	0.0	0.3
Pension pass through - due to CAA's adjustment to NERL's staff costs and WACC	0.3	0.3	0.3	0.3	0.3	1.5
NERL Determined Costs	548.6	537.4	527.7	509.1	489.6	2612.4

Source: NERL & CAA calculations

Traffic

6.48 In September 2013 STATFOR published updated forecasts. These have been adopted in the RBP and in the calculation of the DUC (see Figure 2.3 in chapter 2).

Profiling

6.49 As described above, the 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.

6.50 The effects of this are illustrated in Figure 6.17.

Figure 6.17: The effects of profiling DUC: draft PP proposals

£ 2012 prices	2014[31]	2015	2016	2017	2018	2019	CAGR %
Un-profiled DUC	60.98	55.42	53.10	51.16	48.28	45.42	-5.7%
Profiled DUC	60.98	57.23	53.72	50.42	47.32	44.42	-6.1%

Source: CAA

6.51 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.

6.52 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.

Draft PP – NERL Component

6.53 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 table 6.18.

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

Figure 6.18: Adjustment to account for military service units

£2012 Prices	2015	2016	2017	2018	2019
NERL Determined Costs (excl. military) £millions	548.6	537.4	527.7	509.1	489.6
Service units (excl. military)	9,899	10,120	10,315	10,544	10,779
DUC	55.42	53.10	51.16	48.28	45.42
Service Units (incl. military)	10,036	10,262	10,455	10,682	10,912
DC (incl. military) £millions	556.2	544.9	534.9	515.7	495.6

Source: CAA/NERL

Automatic adjustments to the draft PP after consultation

6.54 The draft PP is based on STATFOR traffic forecasts from September 2013 and IMF inflation forecasts from October. The final plan will be amended to reflect the STATFOR and IMF revised forecasts extant before 30 April 2014.

MET

6.55 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.

6.56 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.

6.57 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.

6.58 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.

6.59 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.

6.60 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)

6.61 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.

6.62 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.

6.63 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.

6.64 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.

6.65 The estimates in Figure 6.19 assume the €/£ exchange rate remains constant at 2014 levels.

Figure 6.19: DfT Determined Costs and Determined Unit Cost in Nominal Terms for RP2

	2014	2015	2016	2017	2018	2019
Eurocontrol Cost Base (€000)	517,690	518,477	530,103	542,522	555,233	568,241
UK share	10.59%	11.18%	11.18%	11.18%	11.18%	11.18%
UK cost-base in €	54,836	57,965	59,264	60,653	62,074	63,528
Exchange rate	.8830	.836277	.836277	.836277	.836277	.836277
UK cost-base in £	48,423	48,475	49,561	50,723	51,911	53,127
TSU	9,817	10,036	10,262	10,455	10,682	10,912
Determined Unit Rate	4.93	4.83	4.83	4.85	4.86	4.87

Source: CAA

6.66 The forecast evolution of the EUROCONTROL budget during RP2 will lead to a DUC of £4.83 in 2015, with a small increase to £4.87 by the end of RP2. This represents an average reduction of 2% per annum in real terms compared with the 2014 baseline.

CAA (NSA)

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

6.68 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.

6.69 Figure 6.20 sets out the forecast costs for the NSA in nominal terms for RP2.

Figure 6.20: 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)	9,817	10,036	10,262	10,455	10,682	10,912
Determined unit costs	1.48	1.31	1.30	1.29	1.28	1.21

Source: CAA

6.70 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.

6.71 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.

6.72 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.

6.73 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.

6.74 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.

6.75 £1.9m are Supervision Costs in 2015 of which £1.6m 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.

6.76 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).

6.77 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.

6.78 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 (£50m). The CAA will therefore continue to recover £6m per annum throughout RP2 to meet the liabilities described above.

6.79 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

6.80 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.

6.81 Based on the latest STATFOR traffic forecasts, the CAA's DUC in nominal terms is expected to be £1.31 in 2015, reducing to £1.28 by 2018, with a further reduction to £1.21 in 2019.

6.82 The CAA DUC is expected to reduce by 5% per annum in real terms during RP2, compared with the 2014 baseline figure.

Costs Carried Forward from RP1

6.83 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 6.21 are currently anticipated relating to 2015 charges. [32]

Figure 6.21: Current expected sums carried forward to 2015

£ millions Nominal	2015
NERL	57.0
MET	3.3
CAA & DfT	7.5
Total	67.8
per Service Unit (£)	6.85

Source: NERL and CAA

6.84 The values relating to 2016 are as yet unknown but are expected to be at least as great as those for 2015.

6.85 For 2017 and beyond the expected amount to be carried forward in respect of traffic risk-sharing, inflation and penalty/bonuses is zero. In

[32] Commission Implementing regulation (EU) No 391/2013 - Annex 4 Paragraph 2.

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

UK cost efficiency target

6.86 The following Figures summarise the UK cost efficiency target:

Figure 6.22: Determined costs (DC):

£millions 2012 prices	2014 Base[33]	2015	2016	2017	2018	2019	CAGR 2014 to 2019
NERL	598.7	556.2	544.9	534.9	515.8	495.7	-3.7%
MET	30.6	26.2	25.5	24.8	24.2	23.6	-5.1%
NSA& DFT	51.3	57.5	57.6	57.6	57.7	57.2	2.2%
UK	680.6	639.9	628.0	617.4	597.7	576.5	-3.3%

Source: CAA calculations

6.87 This is consistent with the DUC in Figure 6.23.

Figure 6.23: Determined unit cost (DUC):

£ 2012 prices	2014 Base[34]	2015	2016	2017	2018	2019	CAGR 2014 to 2019
NERL	60.98	55.42	53.10	51.16	48.29	45.42	-5.7%
MET	3.12	2.61	2.49	2.38	2.27	2.16	-7.1%
NSA& DFT	5.23	5.73	5.61	5.51	5.40	5.24	0.1%
UK	69.33	63.76	61.20	59.05	55.95	52.83	-5.3%

Source: CAA calculations

[33] 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.

[34] 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.

Figure 6.24: Summary

	2015	2016	2017	2018	2019
DC nominal (£000)	£685,846.2	£685,886.2	£687,735.7	£679,153.6	£668,154.5
Inflation index	107.2	109.2	111.4	113.6	115.9
DC real (£000)	£639,913.2	£628,018.8	£617,364.2	£597,706.3	£576,496.5
Total Service Units (000)	10,036	10,262	10,455	10,682	10,912

Source: CAA calculations

Consultation questions

6.88 The CAA would appreciate stakeholder views on the following questions:

- Do you consider the proposed UK en route cost efficiency targets demonstrate sufficient contribution to and consistency with the EU target for cost efficiency?
- Do you have any other views on the UK en route cost efficiency targets?

Chapter 7

En Route Cost Efficiency Ireland

Introduction

7.1 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)

7.2 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; therefore they 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.

7.3 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.

7.4 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

7.5 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.

7.6 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

7.7 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 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.

Total en route staff costs

7.8 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% (or 1.6% above inflation) is foreseen for the RP2 period.

7.9 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.

7.10 The factors discussed above (staff numbers, pensions and pay rises) together lead to an increase in en route staff costs over RP2 at an average of 3.4% in nominal terms.

Other operating costs

7.11 Other operating costs will decrease over RP2 by an average of 1.0% in nominal terms. Changes to most costs are expected to be in line with inflation, with some notable 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:

- 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 the consolidated effect of multiple cost reductions within the area, 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.

- 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.

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

Capex and depreciation

7.13 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."

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

Figure 7.1: 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

7.15 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.

7.16 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.

7.17 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

7.18 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

7.19 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.

7.20 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

7.21 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.

7.22 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

7.23 Business continuity is important to the IAA and its customers. It is therefore important that effective contingency arrangements are in place, in particular for Shannon ACC.

7.24 Currently, contingency for Shannon ACC is provided for at the co-located Training Centre. Should access to that facility be denied by fire, chemical spillage or other similar incidents, an off-site contingency facility is available at the IAA's Dublin ACC test and training rig. This latter solution can provide up to a maximum of 70% of capacity (after approximately 120 hours) due to size constraints at Dublin. It may also be costly and difficult to maintain Shannon operations from the Dublin Centre for anything beyond the short term due to the distance between the two facilities.

7.25 Taking this into account and to provide a robust, sustainable

contingency capability for the Shannon ACC, the IAA intends to build a new facility. This will have the potential to provide almost full Shannon capacity and is close enough to Shannon to avoid any of the distance related staffing issues associated with Dublin.

Depreciation

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

7.27 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

7.28 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. 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%.

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

Figure 7.2: 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

7.30 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.

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

7.32 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.

7.33 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%).

Summary overview of costs

7.34 The following table provides the summary overview of determined costs of the IAA ANSP for RP2 in nominal terms (except where

indicated):

Figure 7.3: 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, 2009 real terms)	€96,229.6	€96,424.1	€98,210.4	€100,299.1	€100,193.6
Service Units (000)	3,990.0	4,090.0	4,180.0	4,276.0	4,370.0
Determined unit costs (2009 real terms)	€24.12	€23.58	€23.50	€23.46	€22.94

Source: IAA SRD

IAA (NSA)

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

7.36 The main contributing factor to other operating costs is Eurocontrol cost. Figure 7.4 provides the summary overview of DCs of the IAA NSA for RP2 in nominal terms (except where indicated).

Figure 7.4: 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)	9,541.1	9,674.5	9,829.4	9,996.5	10,166.5
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, 2009 real terms)	€10,525.3	€10,512.6	€10,513.3	€10,526.9	€10,543.1

	2015	2016	2017	2018	2019
Service Units (000)	3,990.0	4,090.0	4,180.0	4,276.0	4,370.0
Determined unit costs	€2.64	€2.57	€2.52	€2.46	€2.41

Source: IAA SRD

Met Éireann

7.37 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.

7.38 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.

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

Staff costs

7.40 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.

7.41 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.

7.42 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

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

7.44 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.

7.45 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

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

Summary

7.47 Figure 7.5 provides the summary overview of DCs of Met Eireann for RP2 in nominal terms (except where indicated).

Figure 7.5: 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, 2009 real terms)	€6,479.5	€7,569.8	€7,761.1	€7,149.0	€6,617.2
Service Units (000)	3,990.0	4,090.0	4,180.0	4,276.0	4,370.0
Determined unit costs (2009, real terms)	€1.62	€1.85	€1.86	€1.67	€1.51

Source: IAA SRD

Irish en route cost-efficiency summary

7.48 Figure 7.6 summarises the combined determined costs for the three accountable entities for Ireland, as discussed above. Costs are in nominal terms (except where indicated):

Figure 7.6: 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)	€40,247.4	€39,829.3	€40,088.7	€40,830.4	€40,312.8
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, 2009 real terms)	€113,234.4	€114,506.5	€116,484.8	€117,947.9	€117,353.9
Service Units (000)	3,990.0	4,090.0	4,180.0	4,276.0	4,370.0
Determined unit costs (2009, real terms)	€28.38	€28.00	€27.87	€27.59	€26.85

Source: IAA SRD

Consultation questions

7.49 The IAA SRD would appreciate stakeholder views on the following questions:

- Do you consider the proposed Irish en route cost efficiency targets demonstrate sufficient contribution to and consistency with the EU target for cost efficiency?
- Do you have any other views on the Irish en route cost efficiency targets?

Chapter 8

Terminal Navigation Services UK

8.1 In a February 2013 advice to the DfT, the CAA considered the contestability of the market for Terminal ANS (TANS) provision in the UK[35]. 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[36]. The CAA's decision was published in February 2014[37].

8.2 The CAA has also commissioned independent consultants Capita Property & Infrastructure Ltd to benchmark UK TANS charges[38].

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

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35 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

36 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

37 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

38 Capita Property & Infrastructure Ltd, UK TANS Charge Benchmarking, available from: http://www.caa.co.uk/docs/5/UK%20TANS%20Benchmarking_Rev%20Final%20Redacted_131209.pdf

Section 1: Background

8.4 This chapter presents the CAA's position on targets that will apply to the towers contained within 'charging zone B' and those on the London Approach service.

TANS

8.5 Charging zone B consists of those with over 70,000 IFR movements, measured on the average for the prior three years. The towers covered by the regulation 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).[39]

8.6 From 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).

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

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

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).

Structure

8.9 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

8.10 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

8.11 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.

8.12 There are two Environment PIs 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

8.13 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.

8.14 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

8.15 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.

8.16 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

8.17 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 table now shows a fall in predicted performance at half of the towers.

Figure 8.2: All causes ATFM delay at the 9 airports covered by the scope of the regulation (minutes)

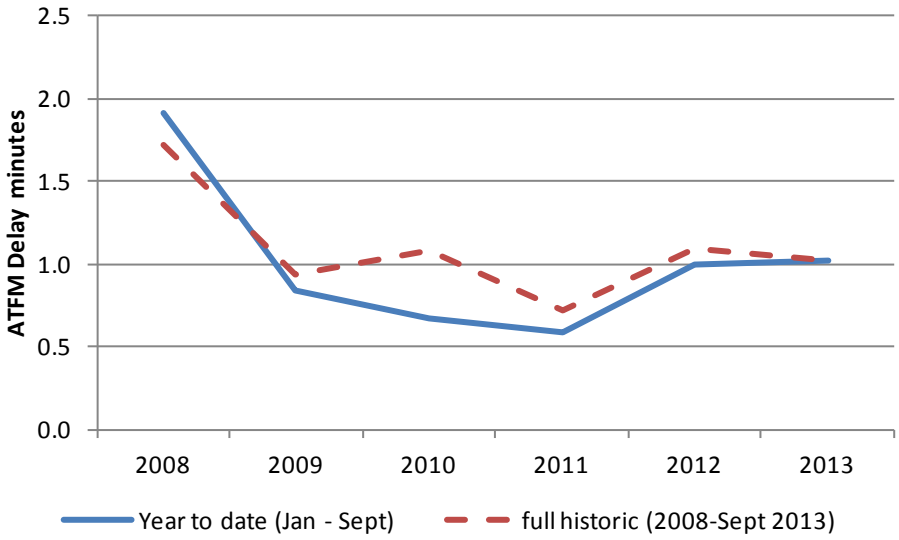
	Historic 2008 - Sept 2013	2011	2012	2012 (Jan-Sept)	2013 (Jan-Sept)
LHR	2.66	1.81	2.57	2.36	2.57
LGW	0.59	0.24	0.93	0.90	0.61
MAN	0.33	0.23	0.37	0.39	0.32
STN	0.10	0.02	0.03	0.00	0.03
EDI	0.15	0.26	0.05	0.06	0.03
LTN	0.12	0.03	0.05	0.03	0.03
BHX	0.05	0.00	0.03	0.02	0.08
GLA	0.01	0.00	0.00	0.00	0.00
LCY	2.41	1.22	1.17	0.86	1.29
All Airports	1.11	0.73	1.09	0.99	1.02

Source: Performance Review Body

8.18 Figure 8.3 presents data for the nine airports; it presents the CAA's calculation of historic delay and greater detail on more recent performance. There is a discrepancy between the CAA's historic calculation of the historic average and that presented by NSL. In 2012 ATFM delay was longer at all of the airports with the exception of Edinburgh, Glasgow and London City. The picture on the Jan-Sept 2012/2013 comparison is different with Gatwick, Manchester, Edinburgh and Glasgow showing improvement, between the comparable periods.

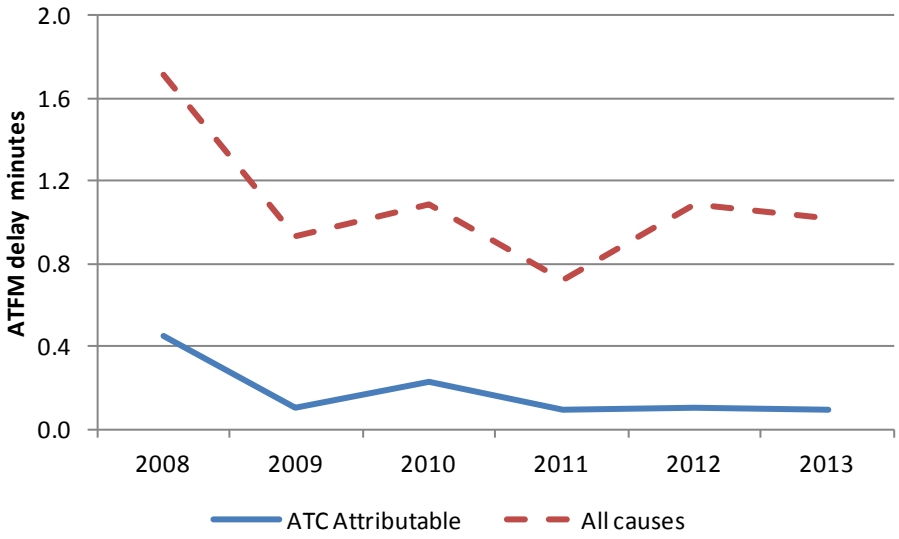
8.19 Figure 8.3 shows a full time series of the ATFM delay data. It shows that following a significant drop in ATFM delay in 2008 the average delay has moved between 0.5 minutes delay to just over 1 minute of delay. The year to date data has generally showed lower delay than that of the full year.

Figure 8.3: Historical full year and year to date all causes ATFM delay at the 9 airports



Source: Performance Review Body

Figure 8.4: ATC attributable ATFM delay for the 9 airports



Source: Performance Review Body

8.20 Figure 8.4 breaks down all causes ATFM delay into more detail focussing on ATC attributable delay. This forms a small proportion overall ATFM delay and is directly in the control of the ANSP. Since 2008 the ATC attributable delay has remained at a similar level.

8.21 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 (TSUs)[40]. It is unclear from this that there is much difference between the airports. However, given the number of variables it is not possible to state a direct link between 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.

8.22 Moreover, matching the historic outturn is not necessarily a stretching target. There is no agreed common methodology for forecasting ATFM delay at the UK level nor an agreed framework to assess the cost and benefits on incentivising reduced ATFM delay and any resultant impact on safety. The CAA therefore faces some difficulty in assessing NSL's projections.

8.23 The CAA is, however, 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[41] and include the early implementation of LAMP Phase 1, enhanced Standard instrument Departires (SIDs).

8.24 In particular, Gatwick Airport Limited (GAL) is putting significant effort into its ACDM 55[42] 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.[43] 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

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

41 See: CAA, Future Airspace Strategy Development Plan, December 2012: http://www.caa.co.uk/docs/2408/FAS%20Deployment%20Plan.pdf

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

43 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.

departure and arrivals as there will be fewer small aircraft.

8.25 Additionally the CAA considers that holding delay to historic levels at Heathrow may provide some challenge given the continued introduction to airline fleets of the A380. The A380 causes significant air turbulence that affects the minimum spacing required for take-off and landings of small aircraft in its wake.

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

8.27 The airport operators remain best placed to understand the particular issues impact on delay at their airport. Reductions in delays require the combined effort of the airport operator, its ANSP and the airline community. As ATFM delay can be affected by a wide range of issues including infrastructure, staffing and fleet mix. The CAA considers it appropriate therefore to set a target that as a minimum maintains historic performance. This is set out in Figure 8.5 below

Figure 8.5: Target level of maximum ATFM delay at the 9 airports covered by the scope of the regulation (minutes)

(minutes per flight)	Capacity target based on historic performance 2008 to Sept 2013
LHR	2.66
LGW	0.59
MAN	0.33
STN	0.10
EDI	0.15
LTN	0.12
BHX	0.05
GLA	0.01
LCY	2.41
All Airports	1.11

Source: Performance Review Body/CAA

London Approach

8.29 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

8.30 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.

8.31 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.

8.32 This section is set out as follows:

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

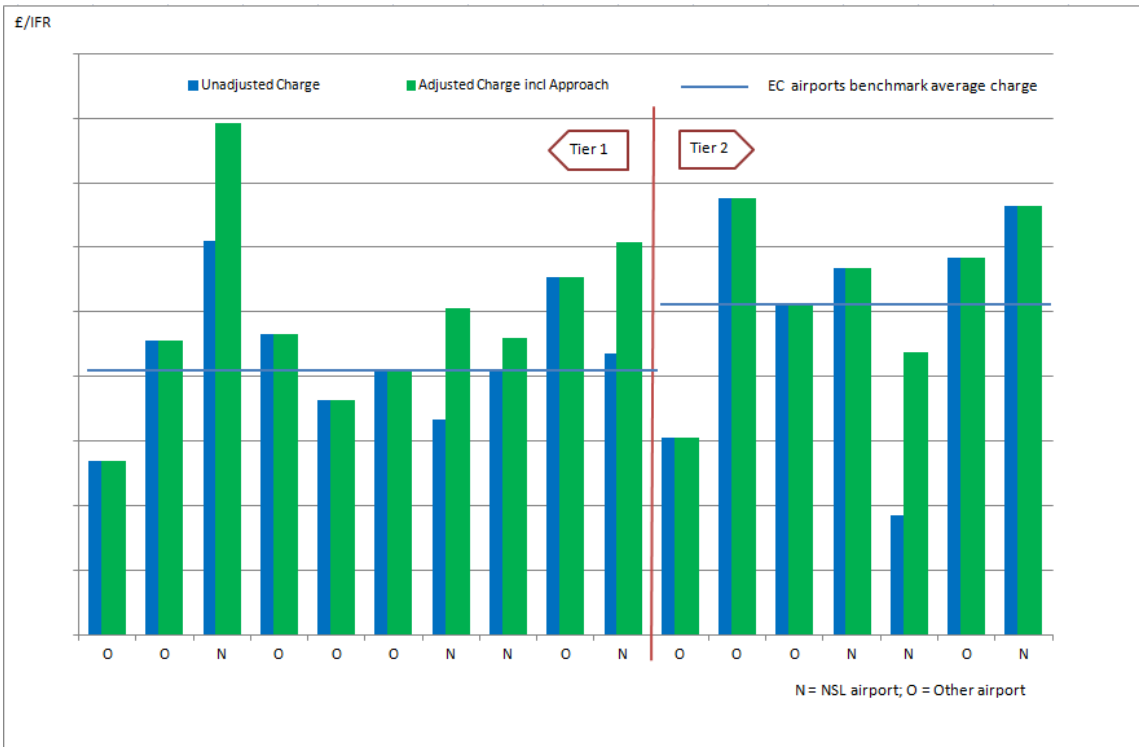
Evidence from the benchmarking

8.33 Alongside CAP132 the CAA published a benchmarking study conducted on its behalf by Captia - *Capita (2013), No 1778 - Service Order 16: UK TANS Charge Benchmarking Consultancy Services for CAA's Regulatory Policy Group*[44]. 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.

8.34 Figure 8.6 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 8.6 and 8.7 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.

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

Figure 8.6: 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)

8.35 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.

8.36 Figure 8.7 below show how the airports compare against these various benchmarks. [---].

Figure 8.7: 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)

8.37 The tables 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

8.38 As published alongside CAP 1132 NSL presented a draft business plan[45] 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 table presented at the end of this section.

8.39 As set out in their business plan compared to 2014, NSL is planning on total DCs remaining constant in RP2, which, with a forecast

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

increase in terminal service units of 2.0%, would result in a corresponding reduction of 2.0% per 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.

8.40 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.

8.41 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

8.42 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.

8.43 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.

8.44 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.

8.45 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.

8.46 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% 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 the development of competition.

8.47 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.

8.48 Figure 8.8 sets out the overall cost envelope for the provision of TANS 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. The DUC is not profiled and the average fall over RP2 is 3%

8.49 The data set out in figure 8.8 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 going forward.

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)	137,747,673	140,750,615	144,433,363	147,588,311	150,597,112
Inflation index (Base = 100 in 2012)	107.18	109.21	111.40	113.63	115.90
Total terminal determined costs (£ real in 2012 prices)	128,519,941	128,880,702	129,652,929	129,884,987	129,937,111
Total terminal determined costs adjusted for cost efficiency (£ real in 2012 prices)	127,234,742	126,315,976	125,802,107	124,767,000	123,568,900
Total terminal determined costs adjusted for cost efficiency (£ nominal)	136,370,196	137,949,677	140,143,547	141,772,743	143,216,355
Service unit forecast	1,124,615	1,154,259	1,175,410	1,199,943	1,225,089
Target DUC (£ real in 2012 prices)	£113.14	£109.43	£107.03	£103.98	£100.87
Target DUC (£ nominal)	£121.26	£119.51	£119.23	£118.15	£116.90
% reduction in DUC		-3%	-2%	-3%	-3%

Source: CAA

London Approach

8.50 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

2012 prices	2015	2016	2017	2018	2019
Total terminal determined costs (£m's real in 2012 prices)	11.3	11.4	11.5	11,6	11,6
Service unit forecast ('000)[46]	851.2	868.4	880.6	895.8	909.2
Target DUC (£ real in 2012 prices)	13.25	13.13	13.08	12.95	12.80
% reduction in DUC		-0.9%	-0.4%	-1.0%	-1.2%

Source: CAA

Consultation questions

8.51 The CAA would appreciate stakeholder views on the following questions:

- Do you consider the proposed UK terminal capacity target appropriate?
- Do you consider the proposed approach to UK terminal cost efficiency appropriate in the context of developing a contestable market in terminal ANS?

[46] N.B. these are terminal service units. Charging on the basis of terminal service units will be new for London Approach from 1 January 2015. The definition of terminal service units is set out in Annex V of the Charging Regulation as the quotient, obtained by dividing by fifty the number of metric tons in the highest maximum certified take-off weight of the aircraft, to the power of 0.7 (expressed to two decimal places).

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 Commission 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[47]. As neither Cork nor Shannon has traffic at this level, Dublin Airport is the only airport to which the performance scheme should be applied.

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 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

[47] (EU) 390/2013 Article 1 (3)

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) 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	142,200	147,200	152,800	158,800	164,400
STATFOR [48]Service Unit Forecast		+3.5%	+3.8%	+4%	+3.4%

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 These targets, expressed in minutes of average arrival ATFM delay per flight attributable to the IAA ANSP, are detailed in Figure 9.3 below.

[48] Source: EUROCONTROL Seven-Year Forecast September 2013

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	0.08	0.08	0.10	0.10	0.12	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

9.16 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.

9.17 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.

9.18 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

9.19 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) (real)	23,410.3	24,487.4	24,799.5	25,128.3	25,266.9
Unit Cost (€)	164.63	166.35	162.3	158.24	153.69

Source: IAA SRD

Assumptions

9.20 The RP2 TANS forecast is based on a number of key assumptions as follows:

Regulatory Context

9.21 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 CAR determination makes provision

for a 'real' terminal charge to customers in 2015 of €136.96 per terminal service unit, before any variable adjustments.

Inflation

9.22 Inflation is based on the CPI provided by the IMF for the period 2015 - 2018. The average consumer price index is a measure of a country's average level of prices based on the cost of a typical basket of consumer goods and services in a given period. The rate of inflation is the percentage change in the average CPI.

9.23 Given that the IMF data only extends to 2018, we have assumed the same CPI increase for 2019. The inflation forecast can be obtained from www.imf.org. This forecast translates into a 2009 price index as follows:

Figure 9.6: Inflation Forecast

	2009	2010 A	2011 A	2012 A	2013 F	2014 F	2015 F	2016 F	2017 F	2018 F	2019 F
Inflation Rate		-1.6%	1.2%	1.9%	1.0%	1.2%	1.4%	1.6%	1.7%	1.7%	1.7%
Price Index	100.0	98.4	99.6	101.5	102.5	103.7	105.1	106.7	108.4	110.1	111.8

Source: IMF

9.24 This index has been used in the RP2 financial forecast.

Pensions

9.25 Pension costs are treated as uncontrollable costs in this Plan. Provision for pension costs has been made on the basis of the latest triennial actuarial valuation (1 January 2012) and the agreement put in place between management and staff in November 2010. This agreement will, over time but beyond RP2, significantly reduce the cost of providing pensions to staff. Details of the terms of the agreement are provided in Chapter 7.

Cost of Capital

9.26 IAA commissioned an independent study on its cost of capital by First Economics. Details of this study are provided in Chapter 7. 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.

9.27 Based on these findings, a real weighted average cost of capital rate of 6.7% has been used. The key parameters on which this calculation was based are as follows:

Figure 9.7: 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

9.28 In establishing a nominal cost of capital rate, an average inflation rate of 1.6% per annum has been used.

Met

9.29 Met costs, included in the Reporting Tables, have been allocated 20% to terminal activities and 80% to en route activities. This allocation is consistent with a determination made by the CAR back in 2002.

CAPEX

9.30 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. This applies to all capital expenditure, both en route and TANS. In the Terminal Environment, the main constituents of RP2 capital expenditure will be;

1. Dublin Surface Movement Radar replacement (due obsolescence) by end Q1 2015
2. 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
3. Introduce Electronic Flight Progress Strips to the Tower at Dublin airport by end Q4 2015
4. Communications Switch replacement at Dublin (due obsolescence) by Q3 2015
5. Upgrade of MET systems at Dublin Airport to provide fully automated reporting by end Q1 2016

9.31 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.

Depreciation

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

9.33 The TANS element of depreciation has been calculated by specifically allocating an appropriate proportion of the assets to TANS. 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.

Operating Costs

9.34 During RP2, the following TANS initiatives are planned to drive efficiencies in the overall levels of TANS operational expenditure:

1. Introduce the Point Merge arrivals procedure for RWY10 at Dublin by end Q4 2016.
2. Investigate opportunities for increased efficiency and reduced operational expenditure associated with Remote Towers.
3. Continue the “crew to workload” initiative, ensuring an appropriate fit between hourly costs and revenue.

4. Implement a Centralised Engineering Monitoring system to drive additional efficiency from Engineering resource.

Consultation questions

9.35 The IAA SRD would appreciate stakeholder views on the following questions:

- Do you consider the proposed Irish terminal capacity target appropriate?
- Do you consider the proposed Irish terminal cost efficiency target appropriate?

Chapter 10

Interdependencies

10.1 There are clear interdependencies between the four KPAs covered by performance plans. These are considered in this section under two headings which are different in kind:

- Safety v other KPAs
- Environment v Capacity v Cost Efficiency

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.

Safety

10.3 To support the NSAs obligations under Article 11.3. (e) of the Performance Regulation, the FAB ANSPs will assess the FAB Plan in relation to their individual ANSP contribution to the FAB Plan's impact on safety and also through an interdependency analysis that identifies potential changes to the elements of the functional system and the possible mitigation measures to be considered. The ANSPs may make use of the EASA guidance published in the Annex to ED Decision 2013/032/R Acceptable Means of Compliance and Guidance Material for the Implementation and Measurement of Safety Key Performance Indicators (SKPIs). The exposition will include an explanation of how the safety of the current operation is assured, as will a study of the impact of changes to the functional system and their safety mitigation. Any trade offs between safety KPA and other KPAs will be identified and will include appropriate mitigation measures.

10.4 The ANSP individual contributions (available in Annex G of the draft Performance Plan) 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

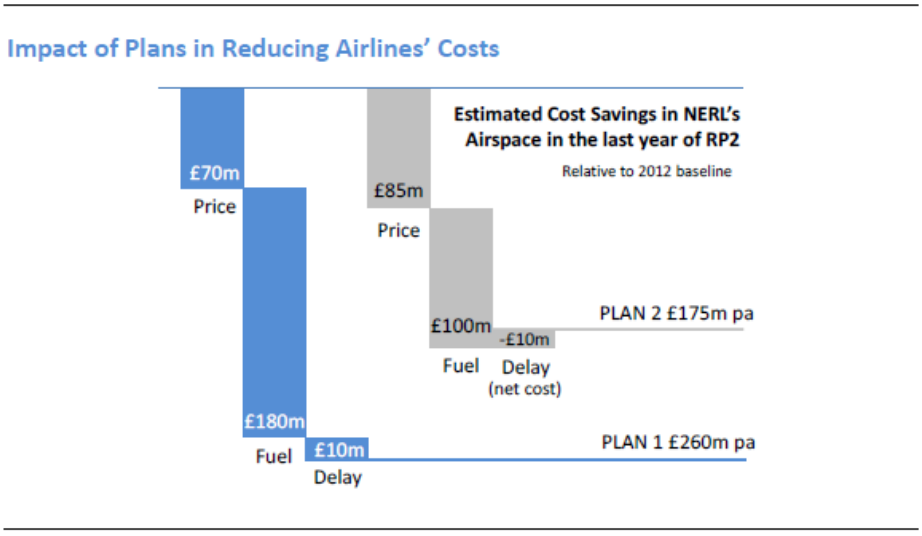
or are planned to be in place to permit the change process to take place. No cumulative or additive effects have been noted and the plan is considered to be at a minimum safety neutral and in general gives rise to increased level of safety. The application and maintenance of SMS will provide an appropriate level of safety assurance coupled with NSA oversight activity.

Environment v Capacity v Cost Efficiency

10.5 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).

10.6 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

10.7 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.

10.8 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.)

10.9 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 1% revenue cap on incentives is too low and airlines 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

10.10 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.

10.11 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.

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[49], 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[50]. 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).

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49 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.

50 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[51].

A6 Taking account of the input from its customers as part of the CCWG process as well as CAA's requirements[52], NATS submitted a Revised Business Plan (RBP) to the CAA on 18 October 2013[53].

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.

Figure 2.1: 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

51 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

52 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

53 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

Area covered	Consultants	Final report
Staff operational expenditure (opex)	Thomson Reuters (Incomes Data Service)	Assessing the efficiency of NERL's total employment costs in RP2
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:

'*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.

B2 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

B3 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.

B4 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.

B5 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

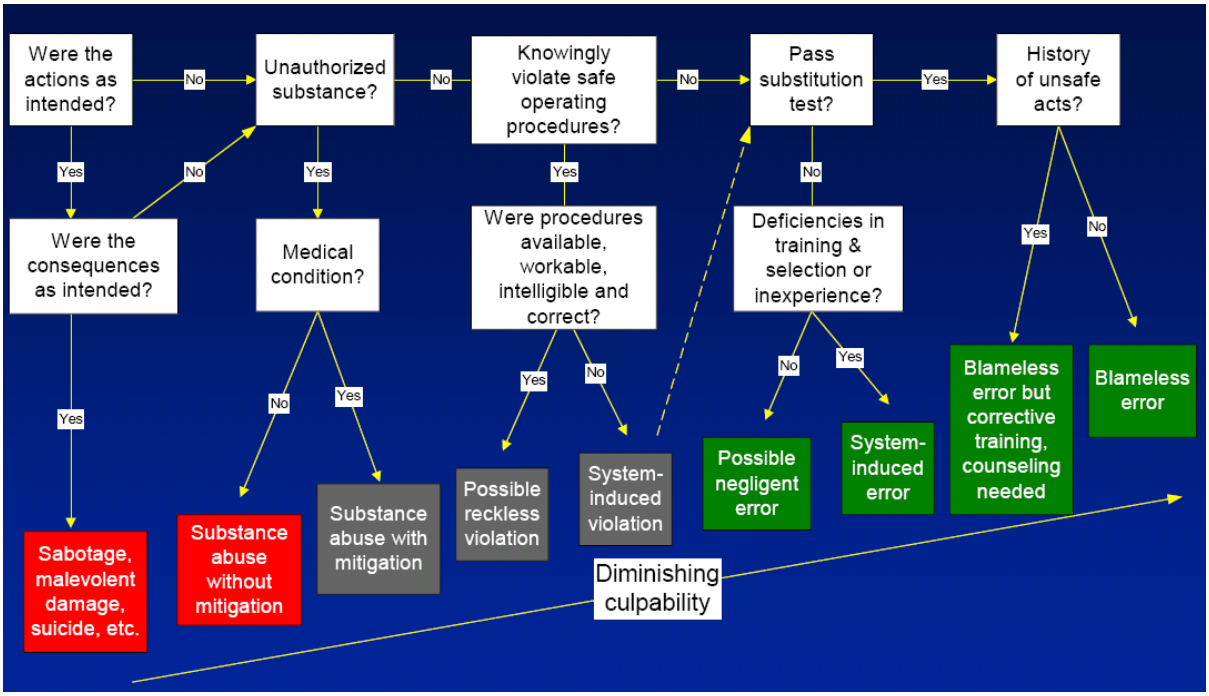
B6 The NSAs give an assurance that their primary concern in relation to the reporting of incidents and accidents is to secure free and

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.

B7 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.

B8 Investigation and analysis of an incident/occurrence shall be assessed in the framework of a Just Culture. An example of such a framework is taken from Reason ('Managing the Risks of Organisational Accidents' - A decision tree for determining the culpability of unsafe acts' p209, 1997, Ashgate Publications) and is shown below.

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

B9 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.

B10 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

B11 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 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

B12 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.

B13 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

B14 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.

Exhortation

B15 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.

B16 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 Policy Review

B17 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[54];
- 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 A.1.

Figure A.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

[54] 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 A.2.

Figure A.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.

Figure A.3: Derivation of the Threshold of Penalties and Bonus

	Penalty	Bonus	Note
Base source	KPI target for C1	Best performance cited in RBP	
Base	0.254	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	27	16	

Source: CAA Calculation

Figure A.4: The rate of penalties and bonuses

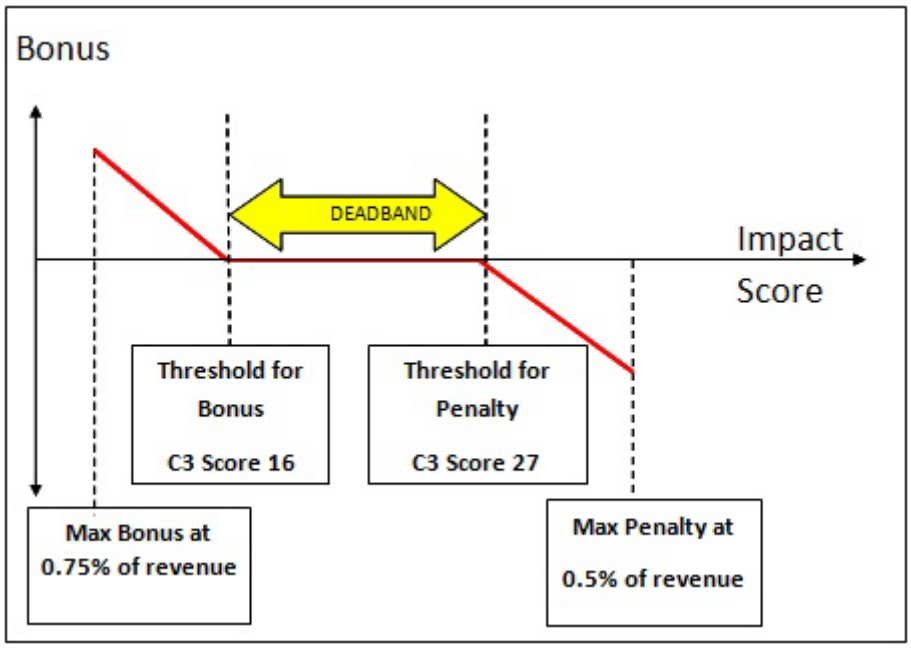
	2012 Prices
Bonus per point per flight	£0.112
Penalty per point per flight	-£0.112

Source: CAA calculation

C7 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 A.5: C3 DIAGRAM



Source: CAA

Modulating the capacity target for significant unplanned changes in traffic

C8 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% less 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.

C9 The CAA proposes that the rate of modulation of the thresholds for bonuses and penalties in excess of ±4% should 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

C10 The C4 Daily "Excess Delay Score" is derived by weighting ATFM delay by the weights set out in Figure A.6. Delay below the lower threshold is weighted as zero.

Figure A.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:

The thresholds at which penalties are paid

C11 The Threshold for the payment of penalties has been set at 1650 - the same level as RP1. (As there does not appear to be robust basis of analysis for very rare events.)

Figure A.7: The rate of penalties

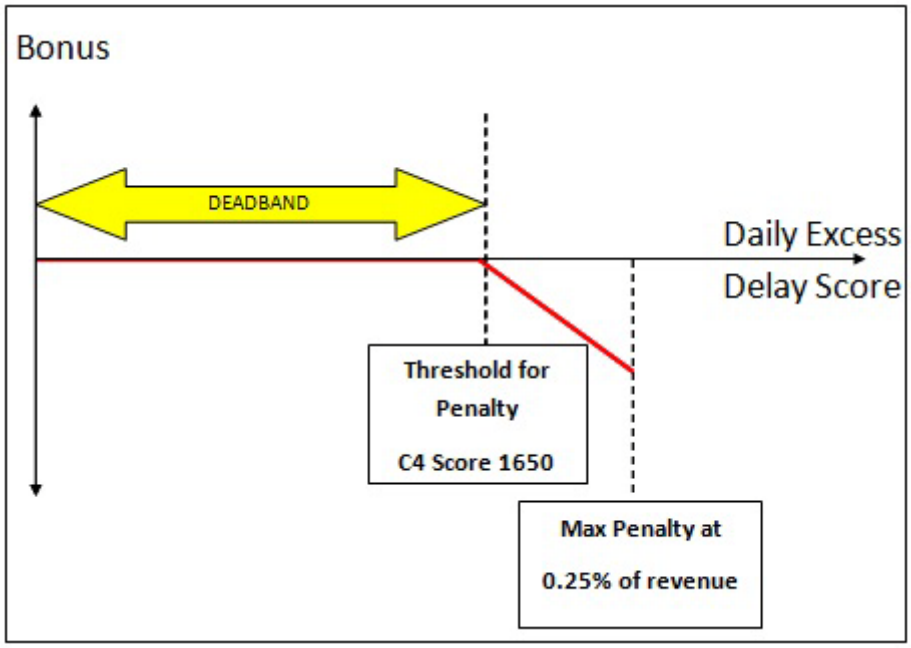
	2012 Prices[55]
Penalty	-0.0008025

Source: CAA

C12 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.

[55] This rate has been indexed from 2006 values to 2012 prices using the RPI index as applied in the current licence.

Figure A.8: C4 diagram



Source: CAA

C13 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

C14 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 Despite the legal restrictions, 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 6.9: Proposed Amendment to RBP for DB Pensions[56]

	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.

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[57]. In the calculation of allowed returns, NERL used the accounting rate of return (ARR) of 6.76%.[58].

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 WACC59	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[60]:

57 "What is the cost of capital for NATS (En Route) plc for RP2?" - Oxera, 24 July 2013.

58 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.

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

60 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 The CAA commissioned PwC to advise on the appropriate cost of capital for NERL for RP2. The Additional Information Annex to the draft PP sets out the CAA's cost of capital assumption for RP2.

Gearing

E4 The 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.

Cost of debt

E5 Oxera estimated that the cost of debt is 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.

E6 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.

E7 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.

E8 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.

E9 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.

E10 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%.

E11 The CAA has chosen the midpoint of this range (2.45%) in its calculation of the WACC. This is below RP1 estimate (3.6%) because market rates have fallen and PwC assumed a higher credit rating assumption compared to RP1.

Cost of equity

TOTAL MARKET RETURNS (TMR), RISK-FREE RATE AND EQUITY RISK PREMIUM (ERP)

E12 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%.

E13 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%. Taking into account this evidence the CAA considers that the appropriate TMR is 6.25%.

E14 PwC recommended a risk-free rate of 0.75% to 1.25% and thus an ERP of 5.5%.

BETA

E15 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.

E16 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.

E17 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.

E18 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 has selected the mid-point in this range (1.115).

E19 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

E20 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.

E21 The effective rate for RP2 is forecast to be 36%[61]. 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%).

E22 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.

E23 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 10.73%.

[61] At the assumed gearing level of 60%.

Overall cost of capital

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	2.45	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)	1.115	1.08	1.15	1.35
Post-tax cost of equity	6.87	6.69	7.55	8.80
Tax uplift	36	36	36	27
Pre-tax cost of equity	10.73	10.45	11.80	12.10
Vanilla WACC62	4.22	4.10	4.50	5.7
Pre-tax WACC	5.75	5.60	6.20	7.0
The rate applied to the RAB	Pre-tax WACC: 5.75%	n/a	n/a	ARR: 6.76

Source: CAA analysis and PwC report

E24 The CAA's point estimate for NERL's pre-tax WACC for RP2 is 5.75%. This represents the 25rd percentile in the range. The CAA has selected the midpoint for all ranges except for the total market returns assumption in which it has chosen the bottom of the range – consistent with the Competition Commissions recent provisional determination on Northern Ireland Electricity.

E25 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[63].

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

[63] 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 returns that are earned throughout the year

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	(0.65)	(0.65)
Increase in tax	n/a	0.53
RP2 proposals	4.22	5.75

Source: CAA analysis

E26 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

E27 The CAA has compared its proposals to recent publications in other regulated UK sectors.

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.

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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**	**4.22%**
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

E28 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

Abbreviations

Abbreviations	
ANSPs	air navigation service providers
ASMA	arrival sequencing and metering areas
ATC	air traffic control
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
CCWG	Customer Consultation Working Group
CFMU	Central Flow Management Unit
DB	defined benefit
DC	determined costs
DfT	Department for Transport (UK)
DTTAS	Department for Transport, Tourism and Sport
DUC	determined unit costs
DUR	determined unit rate
EoSM	effectiveness of safety management
FAB	functional airspace block
FAS	future airspace strategy
FRA	Free Route Airspace
HLS	High Level Sectors
IAA	Irish Aviation Authority (ANSP)
IAA SRD	Irish Aviation Authority Safety Regulation Division (Irish NSA)

Abbreviations	
IBP	initial business plan
IFR	Instrument Flight Rules
JC	just culture
KEA	horizontal en route flight efficiency of the actual trajectory
KPA	key performance areas
KPI	key performance indicator
LAMP	London Airspace Management Programme
MoD	Ministry of Defence
NATS	NATS Holding Ltd
NERL	NATS En Route Limited
NSA	National Supervisory Authority
NSL	NATS Services Limited
NTCA	Northern Terminal Control Area
OEF	Oxford Economics Ltd forecasts
Opex	operating expenditure
PBO	pensions benefit obligation
PP	Performance Plan
PPP	Public Private Partnership
PRB	Performance Review Body
PwC	PricewaterhouseCoopers
RAT	Risk Analysis Tool
RBP	revised business plan
RP	reference period
RPI	retail price index
SARG	CAA Safety and Airspace Regulation Group
SES	Single European Sky
SESAR	Single European Sky ATM research
STATFOR	Eurocontrol Statistics and Forecasting Service
SUs	service units
TA	transition altitude
TANS	terminal ANS

Abbreviations	
TEN-T	Trans-European Transport Networks
TSUs	terminal service units
WACC	weighted average cost of capital