

# NERL Oceanic Charges: Proposals for a charge cap - 2015-2019

A consultation document

**CAP 1205**

A large, abstract graphic composed of overlapping, semi-transparent blue and grey circular and curved shapes, creating a sense of depth and movement. It occupies the bottom two-thirds of the page.

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## CHAPTER 1

# Introduction

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## Purpose

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- 1.1 The purpose of this document is to consult users on the CAA's proposals for a charge cap on NATS En Route plc (NERL)'s Oceanic services for the period 1 January 2015 to 31 December 2019.

## Background

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- 1.2 The CAA currently regulates the maximum that NERL can charge users for Oceanic services by means of a condition in the NERL En Route Licence issued under the Transport Act 2000. The current charge control was set in December 2010. The maximum charge per Oceanic Flight was £64.92 in the year April 2011-March 2012. This maximum was then constrained to fall (in real terms) by the increase in the Retail Price Index (RPI) minus 4 percent (RPI-4%) in each of the three succeeding years until the year ending March 2015.
- 1.3 If adopted, the proposals in this consultation document would be included in a new charge condition that would apply for the five years from 1 January 2015 to 31 December 2019. It should be noted that these proposals would end the current charge condition three months earlier than originally specified in order for it to be aligned on a calendar year basis with NERL's other regulated charges. (It is anticipated that in these circumstances NERL would also change the charging year for Oceanic charges to a calendar year.)
- 1.4 The price base used in this document is 2012 prices unless otherwise stated.

## Why is Oceanic being considered separately from other en route services?

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- 1.5 A joint UK-Ireland FAB Performance Plan setting out targets for safety, environment, capacity, and cost efficiency for domestic en route and terminal services has been prepared in accordance with EU Single European Sky (SES) legislation.<sup>1</sup> The Oceanic services are not covered by this legislation. Moreover, the service is sufficiently different from the service in UK domestic airspace to merit a separate treatment from the approach mandated under SES.

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

- 1.6 The assumptions behind the proposals for Oceanic services in this consultation document are, however, intended to be fully consistent with the traffic and financial projections for the UK-Ireland FAB Performance Plan.

## Views invited

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- 1.7 Any representations and comments should be sent, if possible, by e-mail, to [NATSoceanic@caa.co.uk](mailto:NATSoceanic@caa.co.uk) by **25 September 2014**. Alternatively, comments may be sent by post to:

Stephen Gifford  
Head of Economic Regulation  
Markets and Consumers Group  
CAA, 4th Floor, CAA House, 45-59 Kingsway, London WC2B 6TE

- 1.8 The CAA expects to make responses available on its website<sup>2</sup> for other interested parties to read as soon as practicable after the period for written comments expires. 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.
- 1.9 If you would like to discuss with the CAA any aspect of this document, please contact Mike Goodliffe at 020 7453 6226, [mike.goodliffe@caa.co.uk](mailto:mike.goodliffe@caa.co.uk) or Anna Zalewska at 020 7453 6291, [anna.zalewska@caa.co.uk](mailto:anna.zalewska@caa.co.uk).

## Next steps

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- 1.10 The CAA is planning to hold an industry seminar for NERL and its users where the CAA will make a presentation on this document and invite questions and initial comments. The seminar will take place on **1 September (10:00-12:00) at the CAA's offices** at 45-59 Kingsway, London WC2. Those wishing to attend should send an email to [NATSoceanic@caa.co.uk](mailto:NATSoceanic@caa.co.uk) by 22 August 2014.
- 1.11 The CAA does not currently intend to hold any subsequent formal hearings given the relatively small scale of the Oceanic business. The CAA intends to rely largely on the written responses from stakeholders and feedback received at the industry seminar.
- 1.12 After allowing sufficient time to consider all responses to this consultation, the CAA anticipates that it will issue a notice setting out its intended licence modifications in mid October 2014. The CAA would then publish a final decision in early December to allow the changes to have effect from 1 January 2015. It should be noted that the Transport Act 2000 gives the licence holder the right of appeal to the Competition and Markets Authority (previously the Competition Commission).

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<sup>2</sup> [www.caa.co.uk/natslicence](http://www.caa.co.uk/natslicence)

- 1.13 It is envisaged that this licence modification process will take place at the same time as and alongside other modifications to the licence arising from the parallel SES process.<sup>3</sup>

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<sup>3</sup> The adopted UK-Ireland FAB Performance Plan for RP2 (2015-2019) is available from: <https://www.gov.uk/government/publications/single-european-sky-performance-scheme-2015-to-2019>.

## CHAPTER 2

# NERL's Oceanic business

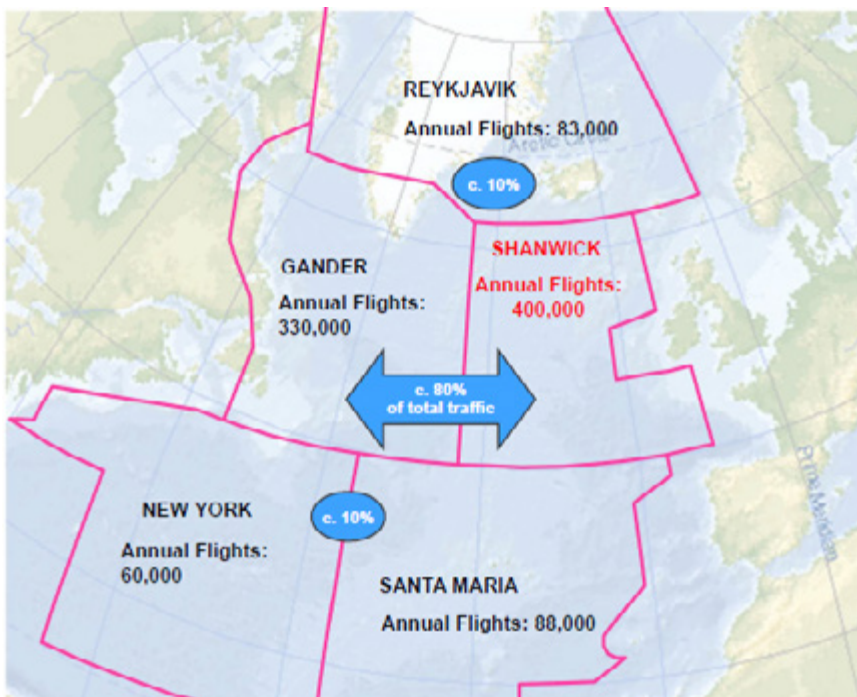
### Introduction

2.1 This chapter sets out the characteristics of the Oceanic business including those that distinguish it from UK domestic Air Traffic Control services (UKATS), which include the Eurocontrol business<sup>4</sup>.

### Background

2.2 The management of the Shanwick area of oceanic airspace over the North Atlantic is delegated to the UK and Ireland by ICAO<sup>5</sup>. The UK is responsible for air traffic service and datalink communications while Ireland is responsible for high frequency communications.

**Figure 2.1: service providers in the North Atlantic**



Source: NERL

<sup>4</sup> Eurocontrol business is defined in the NATS Licence as "the business of the Licensee consisting in the provision of services for which Eurocontrol Charges are paid."

<sup>5</sup> International Civil Aviation Organisation - an agency of the United Nations Organisation.



- 2.3 As shown in Figure 2.1, the Shanwick area is one of five service providers across the North Atlantic. The management and development of airspace governed by ICAO is through the North Atlantic System Planning Group (NATSPG) and sub-groups. The vast majority of flights (c.80%) are handled by a combination of the Shanwick service and the service provided by Nav Canada from Gander.
- 2.4 Oceanic is a non-surveillance operation (i.e. there is no radar coverage). Separation of aircraft is assured through clearance and management of planned flight trajectories. For transatlantic flights there is an organised track system (OTS), planned on a daily basis, depending on the position of the prevailing Jetstream, to minimise the adverse effect on westbound flights and maximise the benefit to eastbound flights.
- 2.5 There is considerable collaboration between NATS and Nav Canada at both a strategic and a tactical level. NATS has a long-term strategic relationship with Nav Canada for the provision of the Oceanic flight data processing system and supporting datalink systems. This technology is currently being upgraded and replaced under the COAST programme (collaboration of Oceanic airspace and system tools) based on a high level of commonality with the equivalent systems being implemented by Nav Canada. At a tactical level NATS and Nav Canada share planning of the OTS for Shanwick and Gander with NATS focusing on westbound and Nav Canada on eastbound flights.

## Scale of the business

- 2.6 Figure 2.2 illustrates the small scale of the Oceanic business with costs and revenues representing about 4% and the regulatory asset base representing about 3% of the NERL business.

**Figure 2.2: Scale of Oceanic business**

|                               | <b>£ million<br/>(2013/4 out-turn prices)</b> | <b>As Percentage NERL</b> |
|-------------------------------|---|---------------------------|
| Total revenue                 | 26.8  | 3.6%                      |
| Total cost                    | 25.5  | 3.8%                      |
| Total operating profit        | 1.3   | 2.0%                      |
| Average Regulatory Asset Base | 31.6  | 2.6%                      |

Source: NERL regulatory accounts and CAA calculation

## Charges

- 2.7 The charges for the NATS element of the service are levied on a per flight basis and are regulated by the CAA under the NERL licence (Condition 22). The licence also requires service performance to be reported (Condition 11).

## Customer consultation

- 2.8 Although the Oceanic service does not fall under the SES performance scheme, the CAA asked NERL to consider the Oceanic service as part of its mandate for the Customer Consultation process in summer 2013, alongside its proposals for domestic services under SES. The CAA considered that this would be an efficient approach for both NERL and users. The initial business plan issued by NERL in May 2013 prior to Customer Consultation therefore identified its plans for Oceanic services and one of the workshops during the consultation period was devoted to Oceanic.
- 2.9 At the conclusion of Customer Consultation the joint Chairs of the Working Group<sup>6</sup> reported that Airlines agreed with the Oceanic strategy presented by NERL in the Revised Business Plan (RBP). Airlines were also keen to engage with NERL on the option and costs for satellite surveillance.

## Performance in CP3 to date

- 2.10 The performance to date in CP3 from the regulatory accounts is set out in Appendix B.

**Figure 2.3 Summary of Oceanic CP3 performance v forecasts**

|                                   | 2011/12     | 2012/13     | 2013/14     |
|-----------------------------------|-------------|-------------|-------------|
| Traffic (actual) v forecast       | +1.1%       | -3.0%       | -4.3%       |
| Out-turn return on RAB v forecast | 6.7% v 5.4% | 4.1% v 5.1% | 4.2% v 5.7% |
| Total costs (actual) v forecast   | -2.9%       | -2.8%       | -0.8%       |

Source: NERL regulatory accounts and CAA analysis

<sup>6</sup> The two joint Chairs were nominated respectively by NATS and the airlines.

## CHAPTER 3

# Issues

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### Does Oceanic require a charge control?

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- 3.1 Given the small scale of the Oceanic business, it seems reasonable for the CAA to consider whether it is proportionate to continue to apply a cap on charges. The rationale for considering this question is given further weight by the new duties that the CAA now has to remove unnecessary regulatory burdens from the industry.<sup>7</sup>
- 3.2 The CAA is, however, mindful that despite its small turnover, the Oceanic business does have a strong market position with 80% of North Atlantic flights passing through the Shanwick area. Clearly the fuel and other costs of flying around this airspace would be disproportionately large so in practice aircraft operating on the densest traffic flows across the North Atlantic have no realistic alternative to flying through this airspace. While the service is operated under mandate from ICAO which could in principle be removed, it is not clear what process would be involved or how much this threat would constrain NERL at least in the short to medium term. The CAA is therefore minded to conclude that NERL enjoys substantial market power. It is not apparent that there are other legal or other constraints to provide protection against the risk that such market power could be abused.
- 3.3 A further consideration is whether there are substantial adverse effects to users of regulation which outweigh the benefits. In this context, it should be noted that the current structure of the price control for Oceanic is very simple. A price control based on the average charge per flight, no service quality terms, and a relatively simple correction term appears to involve very little reporting requirements or administrative costs of compliance for NERL. Although NERL bears all the volume risk of the Oceanic business (unlike the Eurocontrol business), the small scale of this business compared to NERL's overall business means that a fixed price cap does not present significant financial risks to the NERL business as a whole which might prejudice the continuity of service.
- 3.4 On balance, the CAA's provisional view is that the benefits of applying a simple form of charge cap outweigh the burden on the regulated company and users.
- 3.5 The CAA is, however, mindful that a fixed price cap could be a potential barrier to developing superior combinations of product and price to the benefit of users. This may be a real rather than a hypothetical issue for the Oceanic service as

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<sup>7</sup> Under section 73 of the Regulatory Enforcement and Sanctions Act 2008 which was extended to air navigation services by the Civil Aviation Act 2012.

there is the potential for real-time surveillance over oceans and remote areas based on satellite technology to be implemented during the course of the next five year period. This is likely to involve a major step-change in costs as well as user benefits. The CAA is currently minded to address this issue by means of specifying criteria for re-opening the price cap (as set out in paragraphs 3.16-3.20) rather than not setting a price cap at all.

## The timeframe of the control period

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- 3.6 The timeframe for the existing price control (CP3) is from 1 April 2011 to 31 March 2015. This is three months out of phase with the existing price control for Eurocontrol services in domestic airspace which ends on 31 December 2014. The timeframe for Oceanic services are aligned to NERL's financial year while the timeframe for Eurocontrol services are required to be calendar year.
- 3.7 The CAA believes that there is a good case for bringing any control for Oceanic services (and the charging year) into line with domestic services and standardising on a calendar year:
- this would facilitate consistency in traffic and financial assumptions for Oceanic services with Eurocontrol services where the financial projections are required to be reported on a calendar year basis;
  - the London approach charge which was previously set on a March end basis will be set on a calendar year basis subject to the requirements of SES requirements. It would seem anomalous if the Oceanic charges were the only charge not regulated on a calendar year basis; and
  - this will facilitate clearer tracking of financial outcomes based on a set of regulatory accounts on the same basis, subject to an appropriate degree of assurance at a single point of time each year.
- 3.8 NERL has pointed out that there are some transitional costs and benefits from rebasing the regulatory timeframe to a calendar year:
- it would reset the Oceanic charge to reflect the latest traffic forecast slightly earlier than the existing charge for financial year 2014/15 applied until the end of March 2014 (based on the old traffic forecast). This will be to NATS' advantage (c. £0.3m);
  - it would calculate charges based on the lower RP2 cost base (e.g. lower cost of capital, lower operating cost) more quickly than if the existing charge were retained until the end of March 2014. This would be to NATS' disadvantage (c. £0.3m); and

- it would result in the Oceanic charge for 2014/15 only being in place for nine months (75% of the year estimates that (due to traffic seasonality) approximately 78% of the full year traffic volume will be realised in these nine months – this will be to NATS' advantage (NERL estimate this to be c. £0.8m).

- 3.9 The CAA notes these transitional effects. The first two effects appear to cancel each other out such that there is no net benefit to NERL or users. While the third effect would suggest an unanticipated benefit to NERL in 2014/5, it is not as great as the revenue shortfall due to lower traffic in that year compared to what was anticipated for CP3.<sup>8</sup> On balance, the CAA is not proposing to make any adjustment to the recovery in RP2 based on these transition effects.
- 3.10 The CAA also proposes to modify the existing correction term so that it operates two years in arrears, when all the relevant information is known in line with the approach for Eurocontrol.<sup>9</sup>

## RPI v CPI

- 3.11 The Oceanic price cap for CP3 is based on an RPI-Z specification. (Maximum charges are allowed to move each year based on the percentage change in the retail price index minus a factor, Z<sup>10</sup>.) For the period 2015-2019 the inflation factor applied in domestic airspace are based on the Consumer Price Index (CPI). The CAA believes that there may be merit in applying the CPI in respect of the Oceanic charge and is hereby putting this forward as part of the proposal in this consultation.
- 3.12 The CAA notes that CPI is the inflation index used for charging for the remaining c.95% of NERL's business under the SES Performance Scheme in accordance with the Charging Regulation no 391/2013<sup>11</sup>.
- 3.13 This should not affect the expected level of charges at least as they are currently projected. While there is an expected difference in the rates of change of CPI and RPI, the CAA is proposing to set a cap CPI-Z\* equivalent to what it would have been if specified as RPI-Z (i.e. the difference between RPI and CPI will be counterbalanced by the difference between Z-Z\*). There may in the event be

<sup>8</sup> The CAA also notes that the shift to financial years brings forward the elimination of opex contingency by 3 months in line with the CAA proposal to remove contingency costs (see paragraph 4.16).

<sup>9</sup> In practice this correction mechanism has not been active because NERL has charged at exactly the allowed maximum rate. It remains a technical possibility that NERL could charge at more or less than the allowed maximum rate.

<sup>10</sup> The CAA has called this factor Z to distinguish it from the factor X used in the formula for the early RPI-X controls on Eurocontrol charges.

<sup>11</sup> 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, ("Charging Regulation") available from: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2013:128:0031:0058:EN:PDF>

differences in charges if there is a variance between what had been anticipated between RPI and CPI but that difference should be either positive or negative and should be relatively small.

- 3.14 Consistent with the controls on Eurocontrol and London Approach charges, the CAA intends to continue applying RPI as the appropriate index for revaluing the RAB given that this is the basis on which the weighted average cost of capital has been derived.

## **Rolling Incentive Mechanism (RIM)**

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- 3.15 In CP3 the CAA applied a rolling incentive mechanism for both the Eurocontrol and Oceanic businesses. This was designed to provide a constant incentive on the service provider to bear down on costs throughout the reference period by effectively allowing it to retain the benefits for five years. In the UK-Ireland FAB Performance Plan the CAA has honoured previous sums accumulated through the RIM for NERL's Eurocontrol business but has decided not to apply it further in RP2. Given the small scale of the Oceanic business, and in the interests of simplicity and consistency, the CAA is proposing to apply the same approach to Oceanic.

## **Dealing with a technology shift during the control period**

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- 3.16 The current Oceanic service is safe, simple and cost effective. However, NERL has argued that if a surveillance and communication capability were available, it could potentially offer improvements to flight trajectories and therefore offer better flight efficiency.
- 3.17 Although there are no constraints on overall capacity across the North Atlantic, satellite based surveillance and communications would allow the spacing between aircraft to be reduced and thereby enable more aircraft to fly their optimum flight profile and therefore save fuel. If a sufficient level of both surveillance and communications could be achieved, the possibility may exist to reduce spacing to 10 miles. There is also potential for very significant fuel savings by replacing OTS with new technology offering more flexible routings. NERL is currently exploring the technical possibilities with potential suppliers and partners.
- 3.18 There will be a trade-off in this area between very large increases in direct air navigation services (ANS) costs but potentially even greater benefits from reduced fuel burn. NERL has therefore requested that the CAA notes the possibility of NERL investing in this technology during RP2 if there is a business case fully supported by NERL's customers.
- 3.19 The CAA acknowledges that there is a real possibility of technological change being feasible within the next five years which it would not want to foreclose. The possibility of such change for Oceanic services has been recognised at previous reviews. There is a provision in Condition 25.2.a of the NERL licence

to amend the price specifically for the Oceanic business where the Licensee is able to demonstrate to the reasonable satisfaction of the CAA that, after proper consultation with users and other interested parties, there is an acceptable level of support for the Licensee's proposals and that they would be in the general interests of Users.

- 3.20 The CAA proposes that it would be prepared to re-open the Oceanic price cap in these circumstances.

## Questions

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- 3.21 Is it appropriate to continue to regulate Oceanic charges so long as that control is simple and easy to administer? If not, why not?
- 3.22 Do you agree with the proposed form of regulation for Oceanic services? Mindful of the degree of market power, do you consider a different regulatory approach would be more proportionate given the scale of the business? If so, what would that approach comprise?
- 3.23 Should the timeframe for an Oceanic charge control be aligned with the timeframe for the RP2 controls for Eurocontrol and terminal services? If not, why not?
- 3.24 Should the basis of indexation of charges be changed from RPI to CPI (subject to the value of X in a CPI-X charge cap being expected to generate the same amount as the value of Z in an RPI-Z cap)?
- 3.25 Is the approach proposed by the CAA to revise the Oceanic charge cap where the conditions set out in paragraphs 3.16-3.20 apply acceptable? If not, why not?

## CHAPTER 4

# Projections for 2015-2019

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## Introduction

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- 4.1 These proposals for Oceanic services have been constructed to be consistent with the NERL component of the UK-Ireland FAB Performance Plan. In doing this the CAA has based its judgements on the equivalent evidence base:
- the revised business plan (RBP) issued by NERL in October 2013<sup>12</sup> following a process of customer consultation mandated by the CAA;
  - revisions to the RBP to make Oceanic forecasts consistent with revised February 2014 STATFOR<sup>13</sup> traffic and April 2014 IMF inflation forecasts;
  - an “RP2 Airline Community Special Interests Paper”<sup>14</sup> further elaborating on issues identified at the end of customer consultation on issues where they held different view to NERL to the extent that the points raised have a bearing on Oceanic services;
  - CAA commissioned consultants studies.<sup>15</sup>

## NERL revised business plan

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- 4.2 The NERL Revised Business Plan (RBP) was published in October 2013 following Customer Consultation. It anticipated an upswing in traffic in the North Atlantic (NAT) in RP2 following a prolonged period of reduced demand in RP1. Its forecasts were consistent with the STATFOR<sup>16</sup> forecasts used in the plan for the Eurocontrol business.
- 4.3 NERL’s strategy was described as:

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12 The RBP is available from: <http://www.caa.co.uk/docs/5/20131018%20RP2%20Revised%20Business%20Plan%20-%20updated%20for%20PRB%20targets%2018%20Oct%20-%20se....pdf>

RBP Appendices are available from: <http://www.caa.co.uk/docs/5/20131018%20NATS%20RP2%20Business%20Plan%20Appendices%20-%20updated%20for%20PRB%20targets%2018%20....pdf>

13 EUROCONTROL Statistics and Forecast Service (STATFOR).

14 RP2 Airline Community Special Interest Paper is available from: [http://www.caa.co.uk/docs/5/RP2%20Special%20Interests%20Paper%20Final%20\(redacted\).pdf](http://www.caa.co.uk/docs/5/RP2%20Special%20Interests%20Paper%20Final%20(redacted).pdf)

15 Consultancy studies are available from: <http://www.caa.co.uk/natslicence>

16 EUROCONTROL Seven-Year -Intermediate Forecast, May 2013.



- Continuing service improvements within the current method of operation, which would enable NERL to manage costs whilst improving service quality gradually at minimal investment. In line with the ICAO's North Atlantic Systems Planning Group's (NATSPG) plans for the region, it would continue to improve its Oceanic services by delivering improved performance to its customers through investing in new ground-based flight data processing (FDP) systems;
- Deploying new, consistent methods of operation that leverage aircraft equipage and reduce safety risk, leading to conservative reductions in North Atlantic separation standards;
- Delivering sustainable improvements in safety, service quality, fuel and CO2 reductions;
- Maintaining key business relationships with industry and amongst the wider North Atlantic partners, working with them to support earlier benefits from North Atlantic and European ATM integration.

4.4 The NERL Initial Business Plan had assumed that the existing flight data planning system (SAATS) would be replaced in RP2 at the end of its planned life. However, Nav Canada has made the replacement system (GAATS+) available earlier than previously planned and offered to share development costs, which in turn would reduce costs and lead to earlier delivery of flight efficiency benefits to customers. NERL therefore planned to accelerate the GAATS+ investment for completion by the end of CP3/RP1 (via the Collaboration on Oceanic Airspace & System Tools project – COAST). The overall effect was expected to be a small reduction in prices in RP2, but no impact on prices in the current reference period (CP3/RP1).

4.5 While NERL considered the current Oceanic operation to be safe, simple and cost effective, it was working with Nav Canada and ICAO to develop the NAT 2025 Task Force strategy for Oceanic services. This strategy is aimed at gradually removing some of the existing constraints through investment in a number of new technologies and capabilities, which could provide improvements to flight trajectories and fuel efficiency. It would also ensure alignment between the North Atlantic Oceanic operation, North American and European airspace in light of Next Gen and SESAR ATM programmes. NERL expected to consult customers during RP2 on the costs and benefits of deploying new technology and capabilities into its Oceanic operation to support enhanced trajectories over the North Atlantic and efficient sequencing of traffic into domestic airspace.

4.6 The RBP set out the key outputs from the plan as set out in Figure 4.1.

**Figure 4.1: Key Outputs for RBP**

| Date     | Key Output  |
|----------|---|
|          | <b>Safety</b>   |
| On-going | Meet target levels of safety in line with projected traffic growth<br>Vertical risk reduction and improved error capture (supported by CPDLC and ADS-C)<br>Reduction of co-ordination errors (ATC Inter-facility Data Comms – AIDC)                                     |
|          | <b>Service Improvements</b>   |
| 2015     | Full implementation of Reduced Longitudinal Separation Standards (RLongSM)<br>Trial of Reduced Lateral Separation Standards (RLatSM)<br>Deployment and validation of satellite based surveillance capability (2015-18)  |
| 2016     | Final expansion of FANS mandate   |
| On-going | Flight planable speed and vertical flexibility<br>Request monitor (improved access to requested levels) and GoFli (improved access to available levels)<br>Introduction of revised Required Communications and Surveillance Performance standards (RCP / RSP Standards) |
|          | <b>Environment</b>  |
|          | Oceanic service improvements contributing to NATS CO <sub>2</sub> reduction target through minimising lateral track extension and improving vertical profiles   |

Source: NERL Revised Business Plan October 2013

- 4.7 On the basis of the outcome of the process of customer consultation<sup>17</sup> it seems to the CAA that there was significant support for the proposed outputs from the plan at a high level.
- 4.8 The RBP set out NERL's forecast of the costs of the plan as set out in Figure 4.2.

**Figure 4.2: NERL Forecast of the Cost of the RBP**

| Oceanic<br>Calendar Year                          |                |                |              |              |              |              |              |              |              |              |              |
|---|----------------|----------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| 2012 CPI Prices<br>£m                             | 2011<br>Actual | 2012<br>Actual | 2013<br>Plan | 2014<br>Plan | 2015<br>Plan | 2016<br>Plan | 2017<br>Plan | 2018<br>Plan | 2019<br>Plan | CP3<br>Total | RP2<br>Total |
| Efficient Operating Costs                         |                |                |              |              |              |              |              |              |              |              |              |
| Staff & Direct Underlying Costs                   | 15             | 14             | 14           | 14           | 15           | 15           | 15           | 15           | 15           | 57           | 75           |
| Cash Pension Contributions - Defined Benefit      | 4              | 4              | 4            | 4            | 3            | 3            | 3            | 3            | 3            | 15           | 15           |
| Cash Pension Contributions - Defined Contribution | 0              | 0              | 0            | 0            | 0            | 0            | 0            | 0            | 0            | 0            | 1            |
| Exceptionals & Cost of Services to NSL            | 0              | 0              | 1            | 1            | 0            | 0            | 0            | 0            | 0            | 1            | 1            |
| Operating Cost Contingency                        | -              | -              | 0            | 0            | 0            | 0            | 0            | 0            | 0            | 0            | 1            |
| Depreciation of the RAD                           | 6              | 7              | 7            | 6            | 5            | 5            | 4            | 4            | 4            | 25           | 22           |
| Regulatory Return (inc. tax charges)              | 3              | 3              | 2            | 2            | 2            | 2            | 2            | 1            | 1            | 10           | 8            |
| Other Revenues                                    | (1)            | (0)            | (0)          | (0)          | (0)          | (0)          | (0)          | (0)          | (0)          | (2)          | (2)          |
| <b>TOTAL</b>                                      | <b>27</b>      | <b>27</b>      | <b>27</b>    | <b>26</b>    | <b>25</b>    | <b>25</b>    | <b>24</b>    | <b>24</b>    | <b>23</b>    | <b>107</b>   | <b>121</b>   |

Source: NERL Revised Business Plan October 2013

17 See a report by co-Chairs of the RP2 Consumer Consultation Working Group, available from: <http://www.caa.co.uk/docs/5/RP2%20Co-%20chairs'%20Report%20Final%2030%209%202013.pdf>

- 4.9 The specific building blocks in the RBP are considered below and against changes to assumptions arising from CAA interventions or new information.

## CAA interventions

- 4.10 The CAA proposes that as the Oceanic and Eurocontrol price regimes are expected to be fixed at the same time and for the same period, it is reasonable for them to be based on a consistent set of assumptions and forecast. The assumptions have been adjusted to be estimates on a calendar year rather than a 31 March year end basis.
- 4.11 In addition to making adjustments to the RBP to align forecasts of traffic and inflation, the CAA is also proposing to make a set of interventions to cost assumptions, consistent with those applied to the Eurocontrol business, where it considers it appropriate to do so. This judgement is based on the full information set considered for the NERL component of the UK-Ireland FAB Performance Plan as set out in paragraph 4.1.

## Building blocks

### Traffic forecasts

- 4.12 The RBP assumed forecasts consistent with STATFOR's May 2013 forecasts. The NERL component of the UK-Ireland FAB Performance Plan is based on STATFOR February 2014 forecasts. NERL has produced an update of its Oceanic forecasts designed to be consistent with the STATFOR February 2014 forecast to update the RBP.<sup>18</sup>

**Figure 4.3: Comparison of flights proposals v RBP**

| (000) Flights                      | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 | 2019/10 |
|------------------------------------|---------|---------|---------|---------|---------|---------|
| RBP                                | 399.9   | 410.9   | 419.7   | 429.6   | 439.0   | 448.8   |
| Proposal based on STATFOR Feb 2014 | 406.6   | 414.9   | 420.6   | 427.6   | 434.3   | 441.7   |
| Difference                         | 1.7%    | 1.0%    | 0.2%    | -0.5%   | -1.1%   | -1.6%   |

The data has been presented as financial years.

- 4.13 The CAA has adopted the revised forecasts (presented for calendar years) in this consultation document for the purpose of constructing a price cap for Oceanic services.

<sup>18</sup> The CAA has not updated the forecasts for STATFOR forecasts after Feb 2014 so that they remain consistent with the forecasts for NERL's Eurocontrol traffic in the UK-Ireland FAB Performance Plan.

**Figure 4.4: Calendar year Oceanic flights for proposal**

|                      | 2015  | 2016  | 2017  | 2018  | 2019  |
|----------------------|-------|-------|-------|-------|-------|
| <b>Flights (000)</b> | 412.4 | 420.2 | 426.1 | 432.9 | 439.4 |

Source: NERL

## Operating expenditure (opex)

### Opex excluding pensions and exceptional costs

- 4.14 For staff opex, the CAA proposes to make an adjustment to the assumptions for average pay consistent with that applied to the Eurocontrol business. This would reduce the assumption for increases in average staff costs to the rate of CPI.
- 4.15 For non-staff opex, consistent with the approach to the Eurocontrol business, the CAA proposes to make the equivalent adjustment to the costs for the Employee Share Ownership Scheme as it made to this element of costs for the Eurocontrol business. This continues to make a cost allowance for the distribution of shares to employees at less than cost but does not make an allowance for the anticipated increase in the liability to eventually redeem shares generally.
- 4.16 Also consistent with the approach to the Eurocontrol business, the CAA proposes to remove opex contingency costs (c. £0.2m per year in the RBP). The CAA considers that NERL managers have made best estimates of the expected operating costs of delivering key projects, of dealing with operational peaks and of changing priorities based on their experience for individual work areas. The CAA is therefore not convinced an additional opex contingency is required to deliver the outcomes set out in the RBP.
- 4.17 Non-staff opex is shown in Figure 4.5 below.

**Figure 4.5: Non staff opex**

| 2012 prices (£m) | 2015 | 2016 | 2017 | 2018 | 2019 |
|------------------|------|------|------|------|------|
| RBP              | 5.1  | 4.8  | 4.6  | 4.6  | 4.7  |
| Proposal         | 4.9  | 4.6  | 4.4  | 4.4  | 4.5  |
| Difference       | -0.2 | -0.2 | -0.2 | -0.2 | -0.2 |

Source: NERL and CAA analysis

- 4.18 The overall opex (excluding pensions) assumed in the proposals is compared to the costs assumed in the RBP in Figure 4.6.

**Figure 4.6: Opex costs excluding pensions and exceptional costs**

| 2012 prices (£m) | 2015 | 2016 | 2017 | 2018 | 2019 |
|------------------|------|------|------|------|------|
| RBP              | 15.1 | 15.3 | 15.3 | 15.2 | 15.1 |
| Proposal         | 15.0 | 15.0 | 15.0 | 14.8 | 14.7 |
| Difference       | -0.1 | -0.3 | -0.3 | -0.4 | -0.4 |

Source: NERL and CAA analysis

## Pensions

4.19 The CAA proposes to make adjustment to the assumptions for the cash costs of the defined benefit pensions scheme consistent with the assumptions applied to the Eurocontrol business as follows:

- In respect of the five year reference period, passing through only 80% of the difference between actual contributions and contributions assumed as part of the determined costs when the actual contributions are greater than the assumed contributions (but continuing to pass through 100% of the difference when the actual contributions are less than the assumed contributions).
- reducing the contributions assumed for 2018 and 2019 by a further 10%. These two years are after the next valuation of the scheme so the 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 4.7: Cash pension costs<sup>19</sup>**

| 2012 prices (£m) | 2015 | 2016 | 2017 | 2018 | 2019 |
|------------------|------|------|------|------|------|
| RBP              | 3.3  | 3.3  | 3.4  | 3.4  | 3.3  |
| Proposal         | 3.3  | 3.3  | 3.3  | 3.1  | 2.9  |
| Difference       | 0.0  | 0.0  | 0.0  | -0.3 | -0.4 |

Source: NERL and CAA analysis

Note the numbers might not add up due to rounding.

## Capital expenditure

4.20 Based on:

- the CAA's view that the outcome of Customer Consultation was significant support for the output of NERL's Oceanic plans at a high level,

<sup>19</sup> Includes payments to both defined benefits and defined contributions schemes.

- the view of the CAA's capital expenditure consultants that there is reasonable evidence to support a view that the RBP can be expected to offer value for money for airline users, and
- the potential disbenefits to users should the programme be delayed

the CAA proposes to adopt the capital expenditure projections in the RBP in constant prices for the purposes of the RP2 price control.

**Figure 4.8: Assumed capital expenditure**

| 2012 prices (£m) | 2015 | 2016 | 2017 | 2018 | 2019 | Total |
|------------------|------|------|------|------|------|-------|
| Capex            | 1.0  | 1.0  | 0.6  | 0.5  | 0.8  | 3.8   |

Source: NERL and CAA analysis (converted from financial to calendar years)

4.21 As stated above the CAA recognises that there may be circumstances where the opportunities to bring forward new technologies and the interests of users may lead the CAA to revise the price formula.

## Regulatory Asset Base and Depreciation

4.22 The regulatory asset base (RAB) is a measure of the amount invested in NERL that has yet to be returned through revenue allowances, and therefore represents capital employed. The RAB is indexed to inflation and is, therefore, presented on a current cost accounting basis. Figures 4.9 and 4.10 present an illustrative average RAB in calendar years and regulatory depreciation respectively.

**Figure 4.9: Regulatory Asset Base**

| 2012 prices (£m) | 2015 | 2016 | 2017 | 2018 | 2019 |
|------------------|------|------|------|------|------|
| Average RAB      | 28.6 | 25.7 | 22.7 | 19.9 | 17.2 |

Source: NERL and CAA analysis

Note this is presented in calendar years for illustrative purposes. See Appendix A for the full RAB in financial years.

**Figure 4.10: Regulatory Depreciation**

| 2012 prices (£m) | 2015 | 2016 | 2017 | 2018 | 2019 | Total |
|------------------|------|------|------|------|------|-------|
| RBP              | 5.3  | 4.7  | 4.2  | 3.9  | 3.9  | 22.0  |
| Proposal         | 5.3  | 4.7  | 4.2  | 4.0  | 3.9  | 22.1  |
| Difference       | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.1   |

Source: NERL and CAA analysis

Note the numbers might not add up due to rounding.

## Cost of capital

- 4.23 Following advice from consultants PwC and consultation, the CAA assumed a pre-tax cost of capital of 5.86% for the Eurocontrol business.
- 4.24 At the last review, the CAA applied the same cost of capital assumption to both the Oceanic business and the Eurocontrol business. While the CAA recognised that there was a difference in traffic risk between the two businesses, it took the view that the financing of NERL was conducted on a company-wide basis and it was therefore appropriate for the cost of capital to also be applied on the same basis.
- 4.25 At this current review, the CAA again notes that Oceanic bears all the traffic risk so revenues rise in direct proportion to any variation in traffic whereas, for the Eurocontrol business, there is a traffic risk sharing mechanism by which some of the traffic risk is borne by users.
- 4.26 Indeed, at least some of the rationale for a lower cost of capital for the Eurocontrol business in RP2 was based on the CAA putting a higher value on the risk sharing mechanism for the Eurocontrol business than it did for RP1. However, the effect of the reduced perception of risk on the pre-tax cost of capital was counteracted by an increase in the effective tax rate from 30% to 37%. (All of the effect of the reduced perception of risk would have been wiped out if the effective rate of tax was at the statutory levels.)<sup>20</sup>
- 4.27 However, the CAA also recognises:
- the advice of CAA's consultants PwC was on a cost of capital for NERL rather than specifically directed at the Eurocontrol business;
  - a definitive analysis of a separate cost of capital for Oceanic would need to take account of the effective rate of tax;
  - no separate analysis was conducted for segments of the UKATS business which were not subject to the Eurocontrol cost sharing mechanism (e.g. the MoD contract);
  - the Oceanic business represents only a small segment of the NERL business;
  - in absolute terms the effect of a lower cost of capital on overall Oceanic costs would be small; and

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<sup>20</sup> The difference between the effective rate and the statutory rate of Corporation Tax arises predominantly because of the difference between regulatory depreciation and capital allowances. Prior to RP1 capital allowances were greater than regulatory depreciation and therefore the effective tax rate was low. Recently this has reversed and now capital allowances are less than regulatory depreciation. While it is practicable to use the statutory or the effective rate the CAA believes that it is important to be consistent between reference periods so that both users and the service provider are treated fairly over the life of assets taken as a whole.

- the NERL financial model has been set up to apply the same cost of capital across NERL.

4.28 Accordingly, the CAA proposes that a proportionate approach is to apply the cost of capital used for the Eurocontrol business to the Oceanic business as part of a NERL-wide approach.

**Figure 4.11: Regulatory return**

| 2012 prices (£m) | 2015 | 2016 | 2017 | 2018 | 2019 | Total |
|------------------|------|------|------|------|------|-------|
| RBP              | 2.0  | 1.8  | 1.6  | 1.4  | 1.2  | 7.8   |
| Proposal         | 1.7  | 1.5  | 1.3  | 1.2  | 1.0  | 6.7   |
| Difference       | -0.3 | -0.3 | -0.2 | -0.2 | -0.2 | -1.1  |

Source: NERL and CAA analysis

Note the numbers might not add up due to rounding.

## Profiling

4.29 The CAA has considered whether there is merit in smoothing the evolution of charges so that:

- the percentage rate of reduction after the first year would be equal in each year; and
- NERL would receive the present value of its costs over the course of RP2 in total over the period;

4.30 The CAA has adopted a smoothed approach at previous Oceanic reviews but it has not applied it to the Eurocontrol charges for RP2. This is because different considerations apply. The regulations under single European Sky are prescriptive and do not envisage a deviation from applying “determined costs” and forecast traffic on an annual basis. The CAA is not bound to this approach for Oceanic. In addition, profiling is a necessary element in deriving a simple price control based on RPI-Z or CPI -Z. One further advantage of the approach as it has been applied is that it does not require any ex post correction for out-turn inflation.

4.31 The CAA proposes to continue to apply a profiled approach. The proposed profiling is with a charge per movement of £64.93 in 2015 in nominal terms followed thereafter by CPI-5% in each year 2016 to 2019. This is expected to have the same value of charges in present value as the undiscounted profile.



**Figure 4.12: Profiling the DUC: Expected charge per movement**

| 2012 prices              | 2014  | 2015   | 2016  | 2017  | 2018  | 2019  | PV **   |
|--------------------------|-------|--------|-------|-------|-------|-------|---------|
| Un-profiled DUC          | 61.75 | 60.50  | 57.70 | 55.17 | 52.54 | 50.61 | £102.7m |
| Expected profiled values | 61.75 | 60.98* | 57.98 | 55.14 | 52.44 | 49.87 | £102.7m |

\* £64.93 in nominal vales.

\*\* Present value to start of 2015 at 5.86% discount rate.

Source: CAA

## Questions

- 4.32 Is it reasonable to apply assumptions consistent with those adopted in the UK-Ireland FAB Performance Plan for NERL's Eurocontrol business? If not, why not?
- 4.33 Do you have any comments on the building block assumptions described in paragraphs 4.12-4.28 above?
- 4.34 Is it reasonable to apply profiling to arrive at a simple CPI-X charge control? If not, why not?

## CHAPTER 5

# The CAA's charge control proposals for 2015-2019

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## Introduction

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- 5.1 The CAA's proposal is for a control on Oceanic charges which operates outside the Single European Sky performance plan but for the same review period and is based on a consistent set of assumptions. If adopted, it would be implemented by means of a modification of Condition 22 of the NERL licence.

## Timeframe

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- 5.2 The CAA proposes that the Oceanic charge control would take effect from 1 January 2015.

## Initial proposal

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- 5.3 A draft of the revised charge condition proposed in this consultation document is attached as Appendix C. This draft is based on:
- for the year commencing 1 January 2015, a maximum permitted average charge per oceanic flight of £64.93 (nominal);
  - annual increases in the underlying base charge per Oceanic Flight for the calendar years 2016, 2017, 2018 and 2019 based on a price cap of CPI-5% per year;
  - a mechanism for over- and under-recovery, two rather than one year in arrears<sup>21</sup>.

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<sup>21</sup> This recovery mechanism will generally be zero because the maximum allowed can be determined based on known information before the charge is set for the relevant year.

**APPENDIX A****Summary of building blocks****Summary figures****Figure A.1: Assumed CPI (2012 = 1.0)**

| CPI   | 2015   | 2016   | 2017   | 2018   | 2019   |
|-------|--------|--------|--------|--------|--------|
| Index | 1.0649 | 1.0851 | 1.1068 | 1.1290 | 1.1515 |

Source: IMF April 2014

**Figure A.2: Determined cost summary**

| Determined costs - CY 2012 prices (£m)     | 2015 | 2016 | 2017 | 2018 | 2019 |
|--|------|------|------|------|------|
| Opex (excluding exceptionals and pensions) | 15.0 | 15.0 | 15.0 | 14.8 | 14.7 |
| Exceptional Costs                          | 0.2  | 0.1  | 0.1  | 0.1  | 0.1  |
| Cash Pensions                              | 3.3  | 3.3  | 3.3  | 3.1  | 2.9  |
| Regulatory Depreciation                    | 5.3  | 4.7  | 4.2  | 4.0  | 3.9  |
| Regulatory Return                          | 1.7  | 1.5  | 1.3  | 1.2  | 1.0  |
| Other Income                               | -0.5 | -0.5 | -0.4 | -0.4 | -0.4 |
| Total determined costs                     | 24.9 | 24.2 | 23.5 | 22.7 | 22.2 |

Source: CAA

**Figure A.3: Regulatory asset base in financial years (year end out-turn prices)**

| Year-end out-turn prices (£m)                             | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 | 2019/20 |
|---|---------|---------|---------|---------|---------|---------|
| Opening RAB   | 31.2    | 32.0    | 29.0    | 26.2    | 23.4    | 20.6    |
| Inflation of opening RAB                                  | 0.9     | 1.0     | 1.1     | 1.0     | 0.8     | 0.9     |
| Total actual net capex                                    | 4.8     | 1.2     | 1.4     | 0.7     | 1.0     | 1.6     |
| Pension Contribution Variance                             | 0.5     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     |
| Capitalised financing costs (can be negative or positive) | 0.3     | 0.0     | 0.0     | 0.0     | 0.0     | 0.0     |
| Actual movements in working capital                       | 0.2     | 0.5     | -0.1    | 0.2     | -0.1    | -0.1    |
| Allowed Depreciation                                      | -5.9    | -5.6    | -5.1    | -4.6    | -4.5    | -4.6    |
| Closing RAB   | 32.0    | 29.0    | 26.2    | 23.4    | 20.6    | 18.4    |
| Average RAB   | 31.6    | 30.5    | 27.6    | 24.8    | 22.0    | 19.5    |

Source: NERL and CAA analysis

**APPENDIX B****Summary of performance in 2011-2014****Figure B.1: Summary of Oceanic performance in 2011-2014**

|  | 2011/12 |                   |                   | 2012/13 |                   |                   | 2013/14 |                   |                   |
|--|---------|-------------------|-------------------|---------|-------------------|-------------------|---------|-------------------|-------------------|
|  | Actual  | CP3<br>projection | variance<br>B/(W) | Actual  | CP3<br>projection | variance<br>B/(W) | Actual  | CP3<br>projection | variance<br>B/(W) |
| Flights                                  | 404.0   | 399.5             | 1.13%             | 397.8   | 410.2             | -3.02%            | 402.8   | 421.1             | -4.3%             |
| Shanwick Oceanic Control Area charges    | 26.1    | 26.5              | -0.4              | 25.8    | 26.9              | -1.1              | 26.2    | 27.0              | -0.8              |
| Other revenue                            | 0.6     | 0.6               | 0.0               | 0.6     | 0.6               | 0.0               | 0.6     | 0.6               | 0.0               |
| Total revenue                            | 26.7    | 27.1              | -0.3              | 26.4    | 27.5              | -1.1              | 26.8    | 27.6              | -0.9              |
| Operating Costs                          | 13.8    | 14.5              | 0.7               | 14.2    | 14.8              | 0.7               | 14.6    | 14.8              | 0.2               |
| Defined Benefit Pension Cash Cost        | 4.0     | 4.0               | 0.0               | 4.0     | 4.0               | 0.0               | 3.8     | 3.8               | 0.0               |
| Depreciation                             | 6.4     | 6.4               | 0.0               | 6.8     | 6.8               | 0.0               | 7.1     | 7.1               | 0.0               |
| Total costs                              | 24.2    | 24.9              | 0.7               | 24.9    | 25.6              | 0.7               | 25.5    | 25.6              | 0.2               |
| Regulatory profit                        | 2.6     | 2.2               | 0.4               | 1.5     | 1.9               | -0.5              | 1.3     | 2.0               | -0.7              |
| Capitalised Financing Costs for the year | 0.0     |                   | 0.0               | 0.0     | 1.9               | -0.5              | 0.0     | 0.0               | 0.0               |
| Regulatory return                        | 2.6     | 2.2               | 0.4               | 1.4     | 1.9               | -0.5              | 1.3     | 2.0               | -0.7              |
| Average RAB                              | 38.5    | 40.5              | -2.0              | 34.5    | 37.9              | -3.5              | 31.6    | 34.8              | -3.2              |
| Regulatory rate of return                | 6.67%   | 5.38%             | 1.29%             | 4.11%   | 5.07%             | -0.96%            | 4.17%   | 5.73%             | -1.56%            |

Source: NERL and CAA analysis

**APPENDIX C****Draft licence condition 22**

- C1 Subject to paragraph 2 of this Condition and without prejudice to Condition 25 (Suspension and Modification of Charge Control Conditions) the Licensee shall use its best endeavours to ensure that in each Oceanic Relevant Year beginning on 1 January 2015, 2016, 2017, 2018 and 2019 the Average Charge Per Oceanic Flight shall not exceed the Maximum Permitted Average Charge Per Oceanic Flight calculated in accordance with the following:

$$O_t = U_t + L_t$$

| where:  |   |        |            |      |   |      |   |      |   |      |   |
|---------|---|--------|------------|------|---|------|---|------|---|------|---|
| $O_t$   | means the Maximum Permitted Average Charge Per Oceanic Flight in Oceanic Relevant Year t.   |        |            |      |   |      |   |      |   |      |   |
|         | For the Oceanic Relevant Year beginning on 1 January 2015 the value of $O_{2015}$ shall be £64.93.  |        |            |      |   |      |   |      |   |      |   |
|         | For the Oceanic Relevant Year beginning on 1 January 2016, 2017, 2018 and 2019 the value of $O_t$ shall be:<br>$O_t = U_t + L_t$  |        |            |      |   |      |   |      |   |      |   |
| $U_t$   | is a base charge per Oceanic Flight in Oceanic Relevant Year t calculated in accordance with the following formula:<br>$U_t = U_{t-1} \left[ 1 + \frac{CPI_t - Z_t}{100} \right]$<br>For the purpose of the above calculation for the Oceanic Relevant Year beginning on 1 January 2016 the value of $U_{t-1}$ shall be £64.93. |        |            |      |   |      |   |      |   |      |   |
| $CPI_t$ | means the percentage points change (whether of a positive or a negative value) in the Consumer Price Index between the index published or determined with respect to August in Oceanic Relevant Year t-1 and the index published or determined with respect to August in Oceanic Relevant Year t-2.                             |        |            |      |   |      |   |      |   |      |   |
| $Z_t$   | means a value set by the CAA in respect of each of the Oceanic Relevant Years beginning on 1 January 2016, 2017, 2018 and 2019 shall have the following values:   |        |            |      |   |      |   |      |   |      |   |
|         | <table border="1"> <thead> <tr> <th>Year t</th> <th>Value of Z</th> </tr> </thead> <tbody> <tr> <td>2016</td> <td>5</td> </tr> <tr> <td>2017</td> <td>5</td> </tr> <tr> <td>2018</td> <td>5</td> </tr> <tr> <td>2019</td> <td>5</td> </tr> </tbody> </table>  | Year t | Value of Z | 2016 | 5 | 2017 | 5 | 2018 | 5 | 2019 | 5 |
| Year t  | Value of Z  |        |            |      |   |      |   |      |   |      |   |
| 2016    | 5   |        |            |      |   |      |   |      |   |      |   |
| 2017    | 5   |        |            |      |   |      |   |      |   |      |   |
| 2018    | 5   |        |            |      |   |      |   |      |   |      |   |
| 2019    | 5   |        |            |      |   |      |   |      |   |      |   |

|            |   |
|------------|---|
| $L_t$      | <p>means the correction factor (whether of a positive or negative value) which is calculated in accordance with the following formula:</p> $L_t = \frac{(QO_{t-2}O_{t-2}) - TO_{t-2}}{QO_t} \left[ 1 + \frac{IO_{t-1}}{100} \right] \left[ 1 + \frac{IO_{t-2}}{100} \right]$ <p>where:<br/> <math>L_{2015} = L_{2016} = 0</math></p> <p>Otherwise:</p>  |
| $Q_{t-2}$  | <p>means the quantity of Oceanic Flights in Oceanic Relevant Year t-2 attracting an Oceanic Charge.</p>   |
| $O_{t-2}$  | <p>means the Maximum Permitted Average Charge Per Oceanic Flight in Oceanic Relevant Year t-2.</p>  |
| $TO_{t-2}$ | <p>means the total Oceanic Revenue in Oceanic Relevant Year t-2.</p>  |
| $IO_{t-1}$ | <p>means the average of the yield (expressed as an annual percentage interest rate) on 3 month Treasury Bills published weekly by the UK Debt Management Office, during the 12 months from 1 September in Oceanic Relevant Year t-2 where the value of <math>((QO_{t-1}O_{t-1}) - TO_{t-1})</math> is positive, or 300 basis points per annum above this average rate where the value is negative</p> |