

# Delivering Customer Value

NATS Customer Report  
2014/15



# Keeping customers at the heart of our decision making.

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# Introduction



Our annual Customer Report is intended to describe in one place our work to continuously improve our service to customers, together with your feedback to us from our annual airline and business aviation customer survey.

This year's survey of your satisfaction ratings suggests we are doing better than we have ever done since the survey first ran, but there is always room for improvement. My commitment to you, as I take on the CEO role at NATS, is that I will listen closely to you, take action on the areas you have raised in the survey where we need to do better, and let you know what we have done.

Having led our regulated business for the past three years I hope I have a good understanding of our airline and business aviation customers' priorities; as well as working closely with our airports team to ensure we are aligned across all of our business.

NATS continues to strive to be a good partner, with our suppliers, our neighbours and most importantly, our customers, and we have demonstrated that working together we are able to deliver major innovation.

I'm very pleased to be reporting on a year which includes the introduction of two systems which we believe are

"game-changers" for our service to you. We now have Time Based Separation live at Heathrow, where we estimate that the system has already saved 15-20,000 minutes of delay in the first two months of operation; it is on track to deliver around 80,000 minutes of delay savings each year, and there is of course potential to adapt it for other airports.

GAATS+, the world's most advanced Oceanic system, came into service at Prestwick Centre in December. As well as being designed with the future of the North Atlantic in mind, serving as the basis for a satellite-based ADS-B service, we expect it to deliver fuel savings of around 36,000 tonnes a year.

These developments are an important part of the drive to maintain our excellent safety and service levels, and delivering our target to achieve 10% reduction in ATM CO<sub>2</sub> by 2020. We know how important this is to you and we're pleased to have achieved our interim target this year.

I also appreciate that we must keep demonstrating value for money; our focus on costs continues and we had good feedback from you on our consultation as we developed our business plan for the new regulatory period, RP2, which began in January 2015.

The targets we have for RP2 are very challenging indeed, but I'm confident in our ability to deliver the projected price reduction of 21% by the end of 2019. That reduction will significantly out-perform the European Commission's cost efficiency target, and will also out-perform many of Europe's other major ATC providers by a very large margin.

Partnership is going to matter even more over RP2 as we look to deliver the Future Airspace Strategy where, together with our customers, the CAA and Government, we have a collective responsibility to ensure that our airspace will be able to support the anticipated growth in traffic without compromising the efficiency that you need. And reassuring the general public that change can bring some benefits in terms of noise.

It's going to be difficult, but this is an industry used to difficult challenges and I look forward to working with you to find the best way of delivering the changes that we all will need over the coming years.

A handwritten signature in black ink, appearing to read 'Martin Rolfe'.

**Martin Rolfe**  
Chief Executive Officer

# 1. Customer Priorities



# 1. Customer Priorities

## 1.1 Customer Focus

We work hard to keep customers at the heart of our decision making. And whilst our safety and service record, in some of the world's most complex airspace, is very strong, we recognise customers have high expectations for service delivery in the UK.

In 2014/15, we have been continuing to involve customers more in what we do, to make sure your views and expectations are factored into our plans. The feedback we receive enables us to better focus our attention on customers' strategic priorities for delivering air traffic services, namely:

### **Safety**

Our safety plan sets out our safety target for the regulatory period (2015-2019) to achieve a reduction in safety risk in line with traffic growth during RP2. Based on the current traffic forecast the target reduction is 13%. We continue to work actively with customers and other stakeholders through the Safety Partnership Agreement to identify and resolve specific safety issues.

### **Operational Performance**

We have commenced live operations with Time Based Separation at Heathrow with the aim of reducing the delay caused by strong winds on approach; initial

results are very encouraging. Our extended arrival management trial now sees controllers in a range of neighbouring countries working in partnership to minimise stack holding times for flights arriving into Heathrow. Meanwhile, our Operational Partnership Agreement Priorities and Hotspot Programme ensure a focus on shorter term operational performance.

### **Fuel Savings**

At the close of the calendar year we had enabled a 4.3% reduction in ATM CO<sub>2</sub> emissions (against a 2006 baseline) and we continue to work towards our target of a 10% reduction by 2020. This year we have implemented Direct Route Airspace in parts of Scottish airspace, whilst our Flight Efficiency Partnership, which brings together airline and ATC operational staff to identify potential fuel saving opportunities has enabled over 20,000 tonnes of fuel savings during 2014.

### **Cost**

We have set a stretching target for cost reduction over the next 5 years which will see a projected price reduction of 21% in real terms by the end of RP2 (2019). This significantly out performs the Commission's cost efficiency target for RP2. We consulted customers during 2013/14

as we developed our business plan for RP2, the results of which formed the basis of the RP2 business plan.

### **Implementing the Future**

Our Deploying SESAR programme will transform our operations in support of the Single European Sky, making our airspace and how we work more unified, agile and flexible. We are really pleased to be working with airlines at the early stages of the airspace design process through the Lead Operator Programme. This collaboration is identifying and tackling issues and options in areas such as procedure design, flight navigation and the introduction of PBN that will impact the success and/or efficiency of major airspace change. A particular thank you to those customers who are actively involved in the Lead Operator programme.

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**Our Flight Efficiency Partnership, which brings together airlines and ATC, has enabled over 20,000 tonnes of fuel savings during 2014.**

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# 1. Customer Priorities

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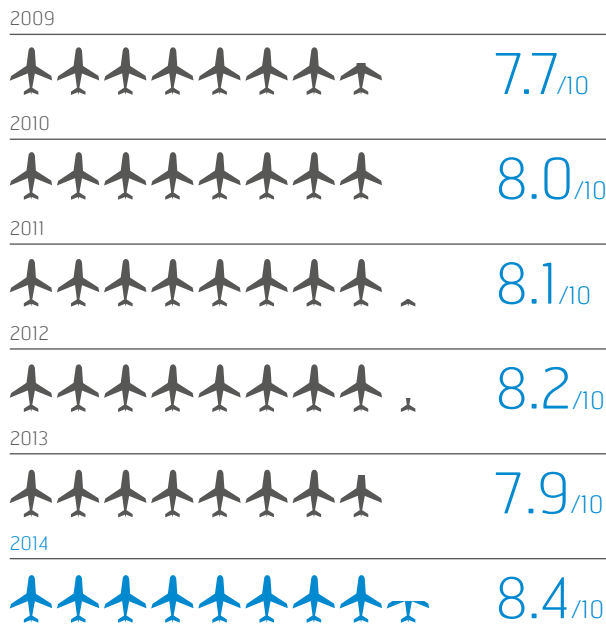
## 1.2 Airline and Business Aviation Survey Feedback

Thank you to everyone who responded to our 2014 airline and business aviation customer survey.

Responses were received from 30 organisations, corresponding to c. 57% of NATS customers by revenue (c. 53% by movements). The overall score was 8.4 out of 10, an improvement on the 2013 score of 7.9. 8.4 represents a good satisfaction score with scope for improvement in some areas, which we will be focussing on this year.

NATS also conducts customer surveys with airports; the results of these are shared directly with the airport.

NATS Airline and Business Aviation Customer Satisfaction Score



**8.4/10**  
2014 customer satisfaction score.



# 1. Customer Priorities

Continued

Key feedback from the survey and feedback received across the year is as follows:

**Positives**

- > Safety – proactive management of safety, provision of timely and effective responses to safety events, and working with customers to drive safety improvements;
- > Operational performance, both domestic and in particular Prestwick Oceanic;
- > Provision of timely responses to queries;
- > Communication of NATS environmental programme – a much improved survey score from 2013 (although still more to do).

**Main areas for improvement**

- > Fuel saving opportunities – customers remain keen for NATS to collaborate with industry partners to drive fuel and emissions saving opportunities (including cross-border opportunities);
- > Value – a year-on-year improvement in the score. Nevertheless customers would like to see a continued focus on cost efficiency;
- > TC staffing – short notice staff sickness within TC approach impacted customers’ operations;

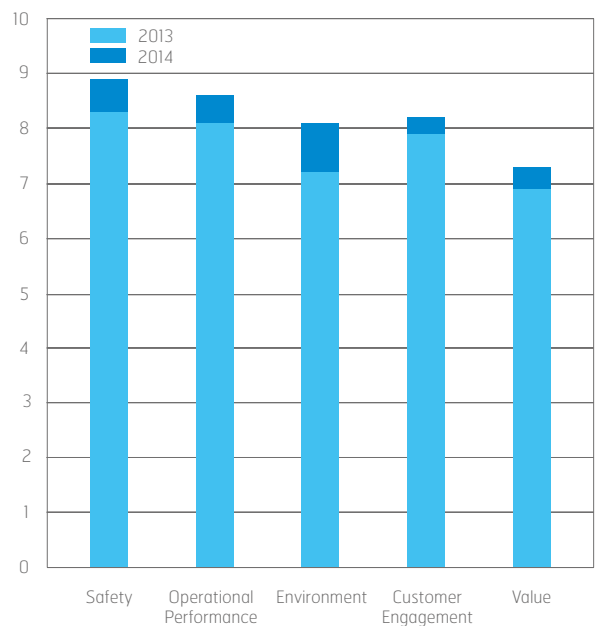
- > Domestic CPDLC – inability to use FANS domestic datalink despite NATS advising datalink capability;
- > NATS systems’ technical resilience – a gap remains between the importance attached to this area by customers compared with the score for NATS delivery during 2014. (The 2014 survey was conducted prior to the 12th December technical failure at Swanwick.)

In the 2013 survey, customers highlighted the desire for further fuel saving opportunities. Our 4% environmental programme and Flight Efficiency Partnership have ensured a continued focus on this and the 2014 survey scores in this area have seen an improvement. We recognise that this remains a key area for customers and we continue to maintain a focus on this. Cost efficiency was also highlighted as an area for improvement – whilst the score improved for 2014 we recognise that this nevertheless remains a priority area.

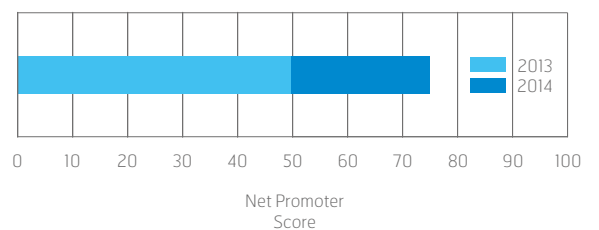
**UK/Ireland FAB**

Feedback from customers shows that customer engagement within the UK/Ireland FAB, in particular customer communications from the FAB, is an area for focus and improvement.

Airline and Business Aviation Customer Survey Results



“How likely are you to speak positively about NATS to a colleague?”

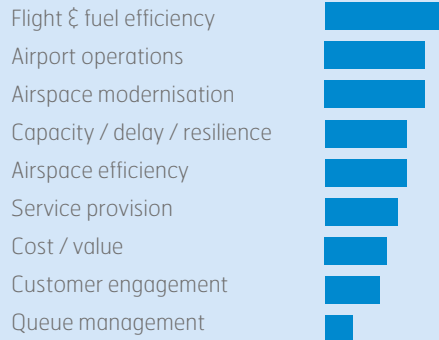


# 1. Customer Priorities

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## Priorities for NATS and ATM

Customers identified their top three priorities for NATS and ATM. Safety aside, the emerging key themes were:





# 1. Customer Priorities

Continued

## 1.3 Customer Engagement

We actively seek customer input and feedback on our strategic plans and day-to-day performance and engage with customers through a number of forums and mechanisms.

### Service and Investment Plan Consultation

We consult with airline customers on our Service and Investment Plan (SIP); the consultation process is being updated for the RP2 control period in line with customer feedback. This will see the introduction of a mid-term interim meeting to update on any proposed changes to the SIP.

### Lead Operator Working Group & Carrier Panel

Our Lead Operator Working Group and Carrier Panel are enabling airlines to work with us on technical and operational aspects of airspace design from the early stages of major airspace change programmes. This collaboration is identifying and tackling issues and options manifesting in areas such as procedure design, flight navigation and the introduction of Performance Based Navigation (PBN) that will impact the success and/or efficiency of major airspace change. The Lead Operators have also provided significant support in terms of flyability, including several flight simulations and workshops.

### Future Airspace Strategy

In addition to NATS own engagement forums, NATS co-chairs (with British Airways) the Future Airspace Strategy Industry Implementation Group (FASIG) and co-chairs the Future Airspace Strategy Deployment Steering Group (DSG), which includes representatives from airlines, airports, business aviation, general aviation, Civil Aviation Authority (CAA), Government and Ministry of Defence (MOD).

<b>Operational Partnership Agreement</b>	Focus on near term operational priorities for the next 12-18 months	OPA Hotspot projects and priorities (operational performance targets)
<b>Flight Efficiency Partnership</b>	Brings together airline, ATC and flight planning providers to jointly consider and implement new proposals for improvements in airspace efficiency	Agreeing quick-win improvements to lateral and vertical route profiles and/or trials to assess potential flight efficiency improvements
<b>Safety Partnership Agreement</b>	Working in partnership with customers and other industry stakeholders to identify and resolve specific safety issues	Working groups to focus on specific safety topics

## 2. 2014/15 Delivery Report



# 2. 2014/15 Delivery Report

Continued

## 2.1 Operational Performance

### Key Indicators

#### Safety (Calendar Year)

		2014	2013	Difference
Safety	Risk Bearing Airprox (Cat A & B) NATS Attributable	1	1	-
	Risk Bearing Airprox (Cat A & B) Any Culpability	9	11	-2
	Weighted Safety Significant Event Index	200	329	-129

#### Notes:

In 2011 we targeted a 10% reduction in the Weighted Safety Significant Event (SSE) Index by December 2014. We have outperformed this target, with a 39% reduction in the index over 2013 and a 49% reduction over the 4 year period.

The Risk Bearing Airprox (CAT A & B) Any Culpability has no discernible pattern in the causes, aircraft types or operators.

#### Service Performance (Financial Year)

		2014/15	2013/14	Difference
Traffic	UK Flights (000s)	2,216	2,162	+2.5 %
	Oceanic Flights (000s)	420	405	+3.7 %
Fuel/CO <sub>2</sub>	Reduction in ATM CO <sub>2</sub> Emissions	4.3 % <sup>†</sup>	2.2 %	+2.1 %
Delays	% of Flights With No NATS Delay	99.8 %	99.7 %	+0.1 %

#### Notes:

<sup>†</sup> as at end December 2014. NATS long term strategic target is to reduce ATM CO<sub>2</sub> emissions by an average of 10% per flight by 2020, against a 2006 baseline, with an interim target of 4% by end 2014.

## 2. 2014/15 Delivery Report

### Continued

#### CP3 Performance Targets

Calendar Year 2014

	2014 Target	Performance	
<b>T1 Average Delay</b> (sec per flight )	8.3	2.22	
<b>T2 Delay Impact</b> Score	23.4	4.17	
<b>T3 Delay Variability</b> Score	1,400	195.2	
<b>T4 3D Inefficiency</b> Score	23.0	23.2	

**Notes:**

The delay variability score (T3) is particularly sensitive to days with significantly higher than average delay.

The 3Di metric accurately measures the efficiency of every flight in UK airspace in three dimensions, helping us to ensure that we route flight paths as close to the environmental optimum as possible.

#### OPA Service Quality Priorities

Calendar Year 2014

	2014 Target		Performance	
	Target	Stretch		
<b>OPA1 Fuel Savings Enabled Flight Efficiency Partnership<sup>†</sup></b> (tonnes fuel savings enabled)	10,000 T	15,000 T	21,465 T <sup>†</sup>	
<b>OPA2 STAM Regulations<sup>‡</sup></b> (% <= 45 mins duration)	95 %	96 %	98 %	
<b>Delay Target</b>	No specific ATFM delay target proposed but business will track vs. CP3 targets and expected RP2 targets			
<b>OPA Hotspots</b>	7 out of 7 Hotspot projects delivered			

The table shows performance against OPA targets, the 'stretch' target reflecting the OPA's view of an 'excellent' service performance standard.

**Notes:**

<sup>†</sup>Excludes SID Truncation which enabled a further 48,000 T.

<sup>‡</sup> STAM = Short Term Air Traffic Flow and Capacity (ATFCM) Measures.

## 2. 2014/15 Delivery Report

Continued

### Service Resilience

During the afternoon of 12th December 2014, NATS suffered a failure of the System Flight Server (SFS) caused by a latent error in the code. SFS connects the Swanwick area control system to the UK wide “NAS” central flight data processing system and manages the data to individual sectors within the Area Control operation.

At no time was safety affected as the controllers still had radar displays and were still able to communicate via radio to flights. Without SFS updating the workstations, the data on flights approaching the sectors and departing from airfields in the UK started to become out of date so it was necessary to put a stop on departures and to apply flow regulation to flights coming into the affected airspace.

Back-up systems and procedures worked as they should and the crisis management plan initiated immediately. The SFS system was restored after a 45 minute outage. Airlines and airports were kept up to date by NATS Air Traffic Incident Communication and Coordination Cell (ATICCC) which organised hourly conference calls to provide updates and expedite the recovery to normal operations once the system had been restored.

Following the event action was taken to prevent the particular conditions which led to the failure being replicated and the latent error in the code rectified in early January. The total primary ATFM delay from the event was 14,863 minutes affecting 353 flights. We recognise that this figure is net of flight cancellations and does not include rotational delays and the impact of short term ATFCM measures. NATS regrets the impact of this service delivery failure on our customers and their passengers.

An independent enquiry chaired by Sir Robert Walmsley KCB was set up at the request of NATS and CAA; the findings were published during May 2015.

We are pleased that the report of the independent Enquiry acknowledges that NATS’ primary duty is to maintain safety and that safety was not compromised at any time on 12 December 2014. We also appreciate the recognition that “impressive and comprehensive crisis management capabilities were mobilised quickly” by NATS employees.

The Enquiry has confirmed that our actions to reduce capacity in the event of a failure to preserve safety were appropriate. However, we will now take this opportunity to ensure that our operational procedures are clearer across the industry to improve

collaborative decision-making and speed up the recovery process.

We agree with the panel’s conclusion that it is unrealistic to expect that complex systems such as ours will never fail. To mitigate this we will continue to invest in making sure that failures are extremely rare and the impact of such failures on the travelling public are minimised as far as reasonably practical. And we are pleased that the panel recognised the continued programme of investment to accelerate the deployment of our next generation of systems.

We will promptly implement the recommendations applicable to us in order to continue providing the otherwise outstanding service that our customers rightly expect.

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At no time was safety affected as the controllers still had radar displays and were able to communicate via radio to flights.

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# 2. 2014/15 Delivery Report

Continued



## 2.2 Significant Projects

### GAATS+ Oceanic



GAATS+ (Gander Automated Air Traffic System) – the world’s most advanced oceanic air traffic system was introduced into service at Prestwick Centre in December 2014.

The system features increased automation of data exchange with other air traffic facilities and integrates a series of safety net tools such as conflict prediction and conflict alert. It also provides controllers with a snapshot of current and planned traffic as well as available route profiles, allowing the controller to easily identify an aircraft’s preferred route and provide a conflict-free clearance. The system is also future proofed to work with ground-based ADS-B surveillance, serving as the basis for satellite-based ADS-B services.

GAATS+ is a result of a unique NAV CANADA and NATS joint development model that has been in place since 2003. The success of the original agreement between NATS and NAV CANADA and the implementation of GAATS+ has also provided a foundation to broaden the scope of collaboration. A new programme called COAST (Collaboration on Oceanic Airspace and System Tools) will be focusing on continued long-term collaboration opportunities for improved safety, service, value and environmental benefits for customers who fly the North Atlantic.

The implementation of GAATS+ is expected to deliver 36,000 tonnes fuel savings annually, significantly contributing to NATS ATM CO<sub>2</sub> targets.

### GAATS+ wins annual IHS Jane’s ATC Award for Service Provision.

Service



Sustainability



Cost Reduction



Fuel Savings



SES / SESAR Alignment



Safety



Obligations



# 2. 2014/15 Delivery Report

Continued

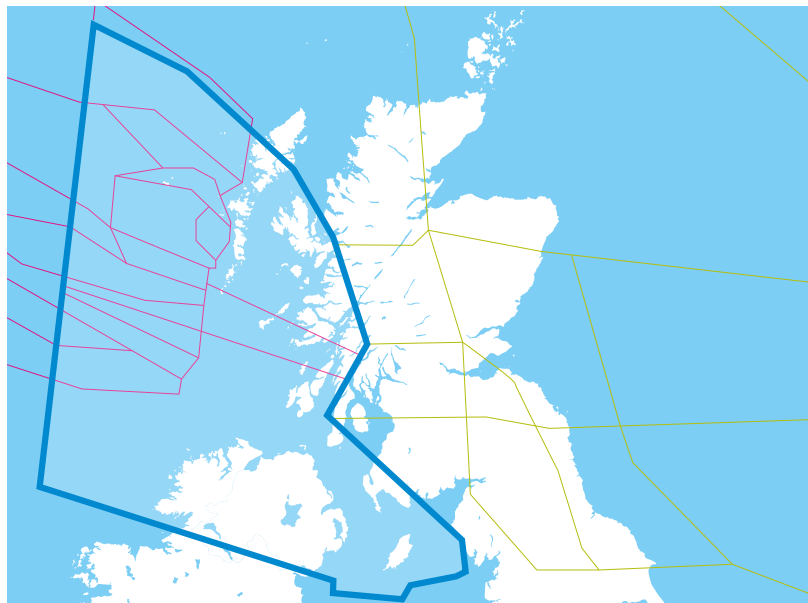
## Direct Route Airspace En-Route



In March 2015 Direct Route Airspace (DRA) was implemented in two areas of upper airspace above 25,500ft to the west of Scotland (Central and Rathlin sectors). Up to 300 direct routes are now available, giving flight planners much greater choice on their specific flight path while allowing them to better avoid bad weather and take advantage of favourable winds. The airspace change has enabled savings of 3,400 tonnes of fuel each year and will also help improve the predictability of arrivals and departures at airports.

The implementation of DRA builds upon phase one of the Dynamic Sectorisation Operational Trial (DSOT) undertaken by NATS and our Functional Airspace Block (FAB) partner the Irish Aviation Authority (IAA).

DRA is the first phase of introducing an entirely free route airspace environment over Scotland, and eventually the whole of Northern Europe as part of a project by the Borealis Alliance of air navigation service providers (see Section 3.7).



# 2. 2014/15 Delivery Report Continued

## Benefits



**Reducing Stack Holding**  
Allows delay to be absorbed in the more fuel efficient and less congested cruise phase of flight.



**Influencing International ATM Industry**  
Realising benefits by introducing interoperability using open standards.



**Reduced Aircraft Fuel Burn**  
Up to now the trial phase has saved the airlines €1.25m.



**Enabling SESAR Deployment**  
The world's first deployment of a SESAR based multi-partner cross border extended arrival management system.



**Leading Through Innovation**  
Pioneering multi-national ANSP cooperation through SWIM architecture.



**Reduced Carbon Emissions**  
The trial to date has saved 7kT of CO<sub>2</sub> emissions.

**Extended Arrival Management (AMAN) Terminal Airspace Interface**

In 2012/13 we began a trial to extend the AMAN horizon for traffic inbound to Heathrow. By slowing streams of arriving aircraft during the cruise phase, when delay is anticipated, flights spend less time in the holding stacks close to the airport, reducing fuel burn and emissions.

The trial has the overall aim of cutting average holding times by a quarter from the current time of eight minutes. Since April 2014, NATS has recorded average delay absorption in the cruise phase nearing 1 minute for those flights influenced by the trial, which correspondingly reduces their holding time, saving airlines over £1 million (€1.25m) in fuel and 7,000 tonnes of CO<sub>2</sub>, as well as reducing noise for communities underneath the stacks.

The trial has seen controllers in the UK, France, Ireland and the Netherlands working in partnership to slow aircraft down up to 350 miles away from London in order to minimise stack holding times on arrival. It is the first step of a broader strategy to reduce the amount of time aircraft spend holding at Heathrow.

In September 2014 the trial entered its third phase, with the minimum stack delay threshold reduced from nine minutes to seven and the maximum speed reduction raised to 0.04 Mach from 0.03. Moreover, the Brest Air Traffic Control Centre (ACC) also joined the trial to take into account more inbound traffic. In December 2014, the trial entered its fourth phase, which extends it until October 2015 as we move toward transition to full implementation and consider management by time as well as speed.

Extended AMAN is a key SESAR concept and the trial demonstrates the UK-Ireland FAB's, FABEC's and Heathrow's commitment to deploying innovative SESAR concepts as part of its implementation plan, and is a practical example of inter-FAB collaboration.



Find out more:



# 2. 2014/15 Delivery Report

Continued



## Departure Enhancement Project Terminal Airspace Interface



The Departure Enhancement Project has successfully completed a program of Performance Based Navigation (PBN) trials and research within UK Airspace; data from over 51,000 departures from Heathrow and Gatwick were collected and analysed.

The project has been run jointly with the CAA as part of FAS and the output of the research is being used to inform and generate UK National Route Spacing guidance and standards, taking the route spacing from today's 7 Nm<sup>†</sup> to c. 4Nm. This will allow much more efficient airspace design. The departure standard of a 1 minute interval for SIDs that diverge by 45° or more has now been successfully reduced following appropriate investigation and safety approval. Technical issues that have been uncovered by the project continue to be tackled and addressed through the Lead Operator Working Group and Carrier Panel. The trials

have provided valuable insight into both the technical aspects and the challenges faced in implementing future technology whilst meeting the needs of all users.

DEP now moves into a new phase of research and data gathering to investigate issues that have arisen during the first phase of the project, filling gaps within the existing dataset and investigating further aspects of aircraft performance when flying PBN routes and procedures.

† Same direction on RNAVI routes

# 2. 2014/15 Delivery Report

Continued



**London Airspace Management Programme**  
Terminal Airspace Interface

Three circular icons are displayed in a row. The first icon shows a globe with several white stars, representing international or global operations. The second icon shows a white airplane in flight against a blue background. The third icon shows a white fuel pump nozzle against a blue background.

LAMP Phase 1a is planned for implementation in February 2016 and will see the introduction of Performance Based Navigation arrival and departure routes for London City together with two new holding stacks and additional Controlled Airspace. In addition there will also be some small changes to routes serving Gatwick, Stansted, Luton and Northolt, a new contingency hold for Solent traffic and a change to Lydd Area Control sector. The changes will facilitate a more efficient and predictable operation for London City Airport and fuel saving benefits for airlines through improved lateral and vertical routing.

During 2014, real-time ATC simulations were undertaken to validate the proposed changes. Involving over 100 participants and some 33 control positions these were the biggest simulations that NATS has ever staged at our Corporate and Technical Centre simulation facilities. Flight simulations for the proposed London City procedures were subsequently conducted by customers through the Lead Operator Working Group.

**NTCA Early Deliverables**  
Terminal Airspace Interface

Three circular icons are displayed in a row. The first icon shows a white fuel pump nozzle against a blue background. The second icon shows a white exclamation mark against a blue background. The third icon shows a white Euro symbol (€) against a blue background.

As part of the early deliverables for NTCA (Northern Terminal Control Area), the PC North Upper sector was removed in May 2015.

PC North Sector replaced the previous North Upper and North Lower sectors and PC East took over part of the previous PC North Lower/Upper airspace. These changes act as an enabler for future Transition Altitude

changes, enable the introduction of revised standing agreements and deliver RP2 cost savings for customers through the rationalisation of controller numbers. The truncation of the HON SID was undertaken as an NTCA early deliverable, enabling 8,400 T of fuel savings for customers.

# 2. 2014/15 Delivery Report

Continued

## Commonwealth Games Network



Two years of planning and preparation, focussed primarily on operations at Glasgow Airport and Prestwick Centre, helped to deliver an event devoid of air traffic related incidents or delays while maintaining a safe, efficient and uninterrupted business as usual service for airline customers. Daily teleconferences were held with customers during the Games period to provide timely operational updates.

Royal Air Force Air Traffic Controllers and Aerospace Battle Managers as well as Police Scotland shared facilities with NATS at the control tower at Glasgow Airport to manage airspace security during the Games.

## DVOR Replacement Network

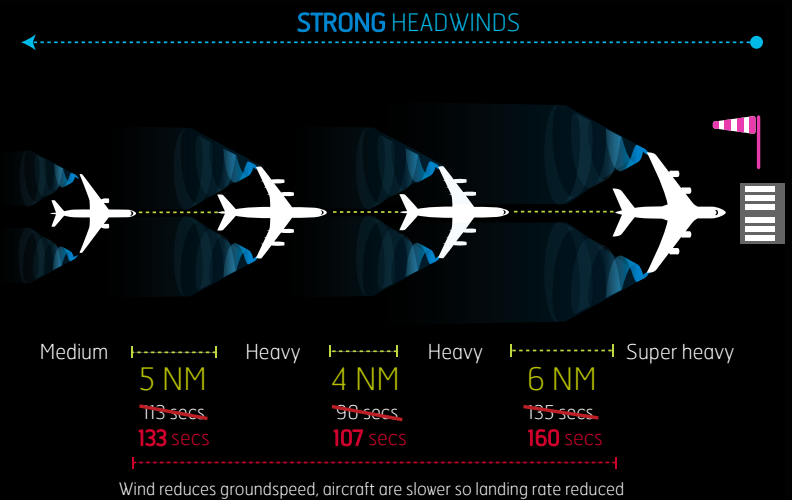


The development of PBN arrival and departure routes and airspace designs enables a reduction in ground-based nav aids, allowing c.27 DVORs to be withdrawn from service and reducing the scale of the planned replacement programme to c.19 DVORs. During 2014 we replaced two DVORs (Ottringham and Berry Head); the programme is planned to continue until 2018. As part of the

rationalisation project, Machrihanish DVOR and Dean Cross en-route procedures were removed. This has allowed Dean Cross to be fully removed from service.

# 2. 2014/15 Delivery Report

## Continued



## 2.3 Delivering Airport Performance

**Time Based Separation**  
Terminal Airspace Interface

This leads to increased airborne holding and delays.

Time Based Separation dynamically adjusts the separation between arrivals to maintain time separation equivalent to the distance separation with a headwind of 5-7 knots. By doing so, the reduced approach separation recovers most of the lost capacity from headwinds.

The initial phase of live operations of the Time Based Separation (TBS) tool began on 24th March 2015, with approval for full operational service being gained from 1st May 2015. The system has been jointly developed by NATS and Lockheed-Martin and is a world first implementation of Time Based Separation. TBS is expected to become the norm for capacity constrained airfields in the coming years.

The TBS system and procedures are expected to significantly reduce inbound Air Traffic Flow Management and airborne holding delays that result from the impact of headwinds on final approach and initial indications are very favourable.

With fixed distance separation between aircraft on final approach, when the headwind component increases, the groundspeed drops resulting in a reduced landing rate.

“

The introduction of Time Based Separation marks a significant milestone for Heathrow, NATS, Lockheed Martin and British Airways. It has brought real benefits to our customers through reducing delays in high winds and has been a great example of the benefits of collaborative working. We look forward to building upon this great work to see what additional benefits can be reaped in the future.

”

Andy Lord,  
British Airways' Director of Operations

## 2. 2014/15 Delivery Report Continued

In order to prove that it is safe to apply time based separation, we measured the wake vortex using LIDAR equipment for over 150,000 flights at Heathrow including all aircraft types over a period of nearly 5 years. This data clearly shows that as the headwind component increases, the wake vortex decays faster and has allowed us to develop a new set of rules for Time Based Separation, which take into account the aircraft wake vortex category and the effect of headwind on vortex decay.

Time Based Separation operates in all wind conditions, reducing the separation between arrivals as the headwind component increases and increasing the separation in still winds or tailwind conditions.

Indications from the first month of operational performance are that TBS is on track to save 80,000 minutes of delay per year at Heathrow. Safety performance has been good with no increase in either reported wake turbulence encounters or go-arounds, and feedback from controllers has also been positive. A significant focus on speed compliance has seen much improved performance over the three month period leading up to the implementation of TBS. Thank you to customers who have worked hard within their organisations to achieve this.



Time Based Separation on final approach, a world first at Heathrow, addresses the biggest single cause of arrival delay at the airport. Heathrow has been operating at 98% capacity for over a decade and so technology like this is essential to maintaining our efficient operations, and providing the best service possible to our passengers.



Derek Provan,  
Heathrow Director of Airside Operations



65

Number of days per year strong headwinds cause delays at Heathrow



80,000

Number of minutes of delay per year TBS will save, halving the current figure



150,000

Number of aircraft studied in the development of TBS

## 2. 2014/15 Delivery Report

Continued

### Airport Integration into the Network



A FAS project, funded by Transport Systems Catapult Ltd (a Government innovation centre) to implement an Electronic Flight Progress Strip (EFPS) upgrade at seven large airports to provide real time Departure Planning Information (DPI) has been successfully completed. Eurocontrol's Network Management Operations Centre (NMOC) transferred Aberdeen's, London City's and Manchester's DPI messages to their operational server in May 15;

Edinburgh's, Glasgow's, Luton's and Stansted's DPI messages will be transferred in July 2015. The average accuracy of target take-off times at these airports has increased by up to 80%. Following a public procurement process, Lockheed Martin has been selected as the supplier to deliver a DPI solution to regional airports without EPFS systems. The roll-out programme is set to continue through 2015/16 (see Section 3.3).

### Strategic Airport Capacity Management



As a result of working in partnership with Heathrow Airport, a new early morning landing slot has been declared. The new Strategic Airport Capacity Management (ACM) tool has transformed the scheduling capability and airfield management at London Heathrow Airport. The last time Heathrow announced a new slot was back in 1996.

Strategic ACM is an innovative web based tool which improves the way airfield capacity interacts with key interfaces, including airspace, ground infrastructure and terminals – looking at a time horizon of six months and beyond.

The tool helps the airport operator assess the impact of various factors on performance such as stand closures and relocation, ATC control and ground movement procedures, scheduling delays and weather. The operator can then declare the existing and future capacity of their runway(s).

Delivery of Strategic ACM is a joint collaboration with Siemens Postal, Parcel and Airports Logistics, McLaren Applied Technologies, AVTECH Sweden AB and sub-contractor Lockheed Martin.

# 2. 2014/15 Delivery Report

Continued



## Remote Simulation Airport



NATS has developed a fully-managed remote simulation service which will negate the need for controllers based at airports to travel to a specialist training facility or maintaining a simulation capability at every site. Already live at TAG Farnborough Airport, a fully managed simulation service was launched at Bristol Airport in December 2014.

The Ace 3D Aerodrome and Approach simulator has been developed by NATS and is operated by our team of simulation experts based at our Corporate and Technical

Centre. 'Pseudo pilots', based at the simulation facility in our head office, play the role of pilots during training and simulations, interacting remotely with controllers based in the tower. The simulator provides airport customers with a leading edge facility for training and familiarisation, as well as helping the ATC team to practise new procedures, techniques and emergency scenarios. This remote model is far more cost effective as it cuts out the need for support staff based at the airport to help out with the simulations.

## Runway Safety Nets Airport



Operational trials which involve the testing of runway incursion sensors are underway at Aberdeen and Manchester airports. The trials are exclusive from each other and NATS have been collaborating with the respective airport operator and system developer to ensure the trials are effective and highlight any issues with the sensors.

The ADB Sensor Controlled Incursion Protection System (SCIPS) has been in operation at Aberdeen Airport on a trial basis since October

2014. At the time of writing, the system has so far detected one runway incursion with both the crew and controller responding as anticipated and the pilot stopping the aircraft before reaching the edge of the runway. The trial is expected to last a total of 12 months.

The runway incursion alerting system trial at Manchester was re-commenced at the start of June following technical upgrades to the system to ensure the effectiveness of alerting in the VCR.

# 2. 2014/15 Delivery Report

Continued

## Radar in the Tower Airport



Through advances in technology we have introduced “Radar in the Tower” operations at Belfast, Cardiff and Southampton airports. Under specific conditions controllers are able to utilise the radar capabilities to provide a combined Radar and Aerodrome service. Implementation is underway at Glasgow and Edinburgh airports and planned for Bristol, Manchester, Aberdeen and Farnborough later this year. This is

an innovative UK regulatory first driven by NATS, and is allowing us to add resilience, efficiencies and the ability to meet changing demands of schedules without an increased cost to our Airport ATC Operations

## Remote Met Observations Airport



A trial of remote Met observations is currently underway at Glasgow and Cardiff airports in conjunction with CAA and Met Office. The trial allows the Semi Automatic Meteorological Observation System (SAMOS) to be run on ‘Auto’ without manual intervention and is seeing c. 90% accuracy through the trial so far. Subject to agreement with CAA, the

plan is to roll out to all NATS units during the next 2 years, and offers enhanced efficiency and consistent Met data.



# 2. 2014/15 Delivery Report

Continued

## 2.4 New Safety Projects

Safety Project	Benefit Delivered
<b>Operational Interfaces</b>	The interface across the boundary with the French has been a specific focus in 2014 with a series of cross border engagement activities which has initiated a programme of 'shadowing' visits for operational staff in order to improve understanding of interface issues and seek improvements.
<b>Civil/Military</b>	NATS has had strong engagement with the MOD regarding the planning and delivery of exercises. NATS staff were involved with pre briefing activities and working with the Joint Tactical Exercise Planning Staff (JTEPS) to manage tactically during the events.
<b>Low Power ADS-B Transceiver</b>	NATS has been instrumental in gaining support from the European Aviation Safety Agency (EASA) and CAA for the use by general aviation of uncertified GPS data and an ability to broadcast and receive this data on-board the aircraft. The Low Power ADS-B Transceiver (LPAT) is currently undergoing flight trials. This is to support early identification of potential infringements.
<b>CAA Infringement hotspot plan</b>	The UK's Airspace Infringement Working Group (AIWG) in conjunction with the Airport Operators Association (AOA) has established five key 'hotspot' areas to target for infringement prevention activity. These are the control zones around Stansted/Luton, Birmingham, Gatwick, Southampton and Heathrow. These represent the units with the most "high risk" infringements, as defined by the CAA's severity scheme. The CAA has set a target on each hotspot to reduce "high risk" infringements by up to 50% by spring 2016. NATS is supporting the hotspot teams at each of the airfields where NATS provides the service.
<b>Level Busts</b>	Level busts can arise from weather-related changes in atmospheric pressure which affect cockpit altitude settings. This year we mitigated risks during periods of low pressure by providing guidance on defensive controlling techniques to air traffic controllers and briefing key operators. The CAA also provided to operators some mitigation strategies to be applied.
<b>Ground Safety</b>	NATS has also been focused on aircraft pushback errors, which are a further safety risk and to mitigate this we have identified a number of improvements, including the development and promotion of a standard set of quick reference pushback documents for ground crew and NATS controllers. In partnership with our airport customers, we will be working to deploy these.
<b>Runway Safety</b>	Operational trials, which involve the testing of runway incursion sensors, are currently underway at Aberdeen and Manchester airports (see Section 2.3).

# 2. 2014/15 Delivery Report

Continued

## 2.5 2014 OPA Hotspot Projects

Each year the OPA agrees a set of Hotspot Projects on specific short-term priority issues. Each project aims to deliver tangible improvements within a 12 month period and is jointly sponsored by NATS and airline representatives. Seven Hotspot Projects were successfully completed during 2014:

2014 Hotspot	Action and Outcome	Delivered
<b>Enhanced Resilience and Recovery</b>	A range of pre-planned re-route/level cap scenarios which are easier to deploy in any future ATM system failure incident in order to maximise uptake of available capacity by airlines when operating in a non-standard manner have been developed. Existing scenarios have been reviewed, shortfalls identified and new scenarios published. Procedure agreed with CAA that additional temporary controlled airspace can be established if required.	Yes
<b>Oceanic Flight Efficiency</b>	Improved information exchange, collaborative planning and efficient utilisation of Oceanic planned and random routes. The focus will be maintained in the 2015 Oceanic Hotspot.	Yes
<b>Conditional Route (CDR) Usage</b>	Building on the 2013 Hotspot to improve the uptake by airlines of flight planned CDRs that enable them to fly shorter routes, an updated version of the Local and Regional Airspace (LARA) tool was deployed at Swanwick. The CDR process was published with headline figures on CDR availability and uptake, and has been used as the background for application for FAS Facilitation Fund support for trials in 2015.	Yes
<b>Sector Capacity</b>	The Hotspot focused on the Daventry South and London Upper Sectors, which were identified as particular delay generating sectors. A reduction in the level of delay from Daventry South & S32 (6777 mins in 2013 to 326 mins in 2014 for the period June-Sept) together with reduction in the number of times a reroute scenario was applied to Daventry South (102 occasions in 2013 vs 54 occasions in 2014 for the period June-Sept).	Yes

## 2. 2014/15 Delivery Report

Continued

2014 Hotspot	Action and Outcome	Delivered
<b>Speed Adherence</b>	A monthly dataset is now shared with all lead carriers at Heathrow, as well as being monitored via the Heathrow Flight Operations and Safety Committee (FLOPSC) to raise pilot awareness of ATC speed restrictions to maximise airspace/runway capacity particularly during approach. New Standard Operating Procedures (SOPs) for speed management have been adopted by some airlines.	Yes
<b>Bristol RNAV Procedures</b>	Completion of the 2013 Hotspot to deliver more efficient flight profiles based on a streamlined airspace change process for replicating conventional procedures for PBN.	Yes
<b>SID Fuel Uplift</b>	The original aim of this Hotspot was to develop a framework to provide airlines with information on variances between the planned for SIDs and the actual climb profiles being achieved – ultimately to reduce fuel uplift and hence a fuel-burn saving. The SID truncation project under environmental 4% programme has updated the old SID profiles to enable more realistic profiles, enabling c. 48,000 tonnes of fuel savings and reducing the need to supply this data.	Yes

## 2. 2014/15 Delivery Report

Continued

### 2.6 Flight Efficiency

During 2014 we reached our interim target cutting aircraft CO<sub>2</sub> by 4% by the end of 2014, ahead of the longer term goal of a 10% cut by 2020. Up to 1m tonnes of aviation related CO<sub>2</sub> is now being saved each year. The reduction equates to more than 300,000 tonnes of enabled fuel savings, corresponding to £155m in savings for airline customers (based on average fuel prices and exchange rates for the 2014/15 financial year, equating to £500 per tonne) and an average 4.3% cut in CO<sub>2</sub> per flight<sup>†</sup> (by the end of FY 2014/15 the reduction had increased to 4.55%). The improvements are the result of both small scale changes and large scale investments which have seen changes to UK airspace that allow for more direct routes and improved vertical profiles; the use of more efficient procedures, such as continuous instead of stepped climbs and descents; and the introduction of new technologies.

Over 300 changes to UK airspace and procedures have been made over the past six years in an effort to find better and more efficient routes for airlines. This includes the more flexible use of military airspace when not in use, which has reduced fuel burn by 10,000 tonnes alone.

NATS has also been leading the Sustainable Aviation coalition's

campaign to monitor and increase Continuous Descent Operations (CDO). CDO reduces noise, fuel burn and CO<sub>2</sub> emissions. NATS is providing performance information to 23 airports and 8 airlines, enabling the first broad insight into UK CDO performance. The campaign aims to achieve a 5% increase in CDO across the UK.

NATS continues to roll out procedural changes and trials to maximise the safety and efficiency of UK airspace, as part of the UK government's Future Airspace Strategy. This has enabled greater certainty over where aircraft will fly through the use of Performance Based Navigation and trialling noise respite options for some communities. We continue to work with community representatives, our airport and airline customers, the CAA, the Department for Transport and other stakeholders to develop innovative solutions to airport noise management.

NATS focus on the delivery of short term tactical and procedural measures to improve airspace whilst continuing with a programme of larger scale structural changes continues into this regulatory period (2015 – 2019) as we work towards achieving our longer term strategic goal of enabling a 10% reduction in ATM CO<sub>2</sub> emissions.

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310,000 tonnes of fuel savings enabled since NATS environmental programme began, equivalent to £155m in fuel savings for customers.

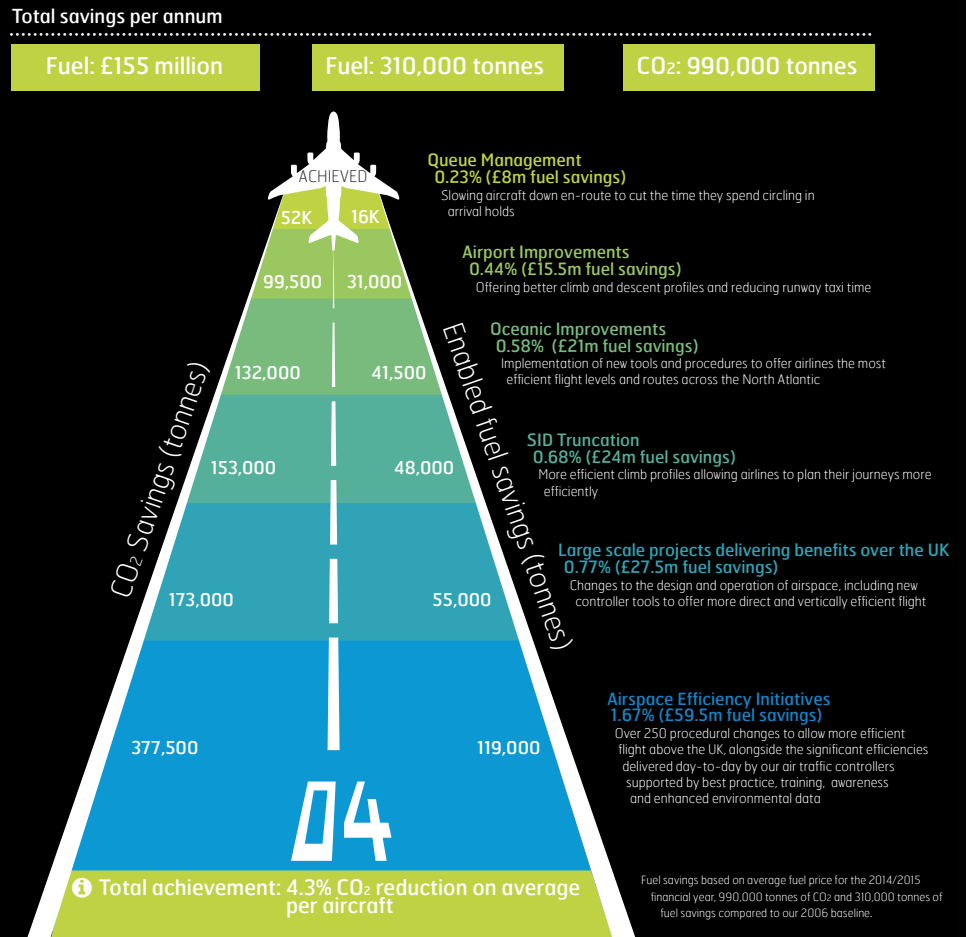
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<sup>†</sup> As of December 2014, 1m tonnes in enabled CO<sub>2</sub> savings calculated against a 2006 baseline.

# 2. 2014/15 Delivery Report Continued

## How the 4% was achieved

The tracker shows how we, working with our employees, customers, neighbouring Air Traffic Service Providers and partners, achieved a 4.3% CO<sub>2</sub> reduction. The 4% target is a milestone towards enabling a 10% reduction in CO<sub>2</sub> by 2020.



### Flight Efficiency Partnership

During 2014/15 our Airspace Efficiency Groups based at Swanwick and Prestwick have continued to work with customers through the Flight Efficiency Partnership to enable fuel savings. Specific changes implemented in 2014/15 included:

- > Changes to Scottish TMA;
- > New conditional routes (CDRs);
- > Level cap improvements/removal;
- > New shorter routings in Swanwick and Prestwick airspace.

The Flight Efficiency Partnership and Airspace Efficiency Groups have collectively enabled 119,000 tonnes of fuel savings since the start of our environmental programme (excluding SID truncation which has enabled a further 48,000 tonnes of fuel savings).

“

NATS continually works closely with all airline customers to understand how fuel burn impacts their business and in turn the environment. This focus and partnership together as an industry has led to significant airspace improvements when compared to before the 4% programme started. We look forward to this engagement continuing as NATS moves towards the 10% fuel saving target by 2020.

”

Operational Partnership Agreement Co-Chairs

# 2. 2014/15 Delivery Report Continued

## 2.7 Our International Business

Delivering first rate and innovative air traffic services to our customers in the UK is critical to our business, including creating partnerships and alliances to accelerate delivery of European ATM integration. We are also working with airlines, airports, ANSPs and governments in over 30 countries to provide answers to the critical issues faced by the aviation industry around the world. Applying our operational expertise and capabilities, in collaboration with key industry partners, is delivering solutions that can benefit airlines and airports across the globe.

### Europe

We are working in our domestic UK market and with European customers to improve the efficiency of trans-European air traffic and apply common EU-standards.

UK, Spain, Romania, Norway, Portugal, Belgium, Sweden, Turkey, Gibraltar

1

### Asia Pacific

NATS is supporting the exponential growth of air travel in the Asia Pacific region, helping to ensure this expansion takes places in a planned and sustainable manner.

Hong Kong, Singapore, India

3

2

### Middle East

NATS is embedded in the Middle East region supporting the growing role as a global aviation cross-roads.

Qatar, Kuwait, Oman, Saudi Arabia

# 3. Forward Plan



# 3. Forward Plan

## Continued

### 3.1 Context

#### Traffic Outlook

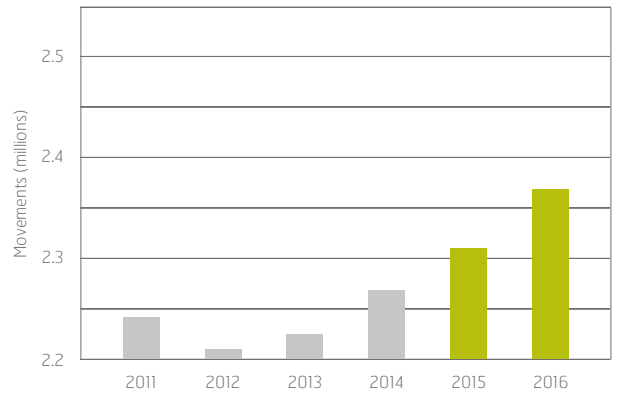
The UK forecasts derived from STATFOR forecast model are now used as the basis for ANSP planning.

The STATFOR forecast reflects economic recovery in the UK, Europe and across world regions with fuel price moderation, indicating a growth in UK IFR flights of 1.9% in 2015 and 2.5% growth in 2016. The average annual growth across the RP2 control period (2015-19) is forecast to be 2.1%. STATFOR is reasonably well aligned with the latest internal NATS forecast.

#### UK/Ireland FAB Performance Plan for RP2

The European Commission has set EU-wide performance targets for RP2 designed to secure significant reductions in ATM costs at the same time as improving performance across all other areas (safety, capacity and environment). During 2013/14 we consulted customers on our business plans for RP2. Following this, the CAA and IAA published their proposed Performance Plan for the UK-Ireland Functional Airspace Block (FAB) and submitted it to the UK and Irish Governments for adoption.

On 2 March 2015 the European Commission published its decision that the UK-Ireland FAB Performance Plan is consistent with the EU-wide performance targets for the next 5 years. The UK component of the FAB Performance Plan significantly out performs the Commission's cost efficiency target for RP2, with a projected price reduction of 21% in real terms by the end of RP2 (2019). Over the 5 years of RP2 as a whole, NERL's contribution to the FAB Performance Plan will cumulatively save airlines £480m (2012 prices) of determined cost when compared against the allowance made by the CAA in the National Performance Plan for the last year of RP1.



UK Flights: Recent Trend and Near-Term Forecast  
Data: Eurocontrol Seven Year Forecast, February 2015



# 3. Forward Plan

## Continued

### 3.2 Performance Targets

#### SES2 Performance Targets for RP2

The SES Performance Scheme is an EU initiative to improve the performance of ANS in four key performance areas (KPAs) as set out below. The UK component of the FAB Performance Plan meets EU wide targets in all four areas and contains additional metrics which are designed to track and incentivise NERL's performance during RP2.

##### > Safety

The UK component of the FAB Plan meets EU wide targets for both the Effectiveness of Safety Management system (EoS<sub>M</sub>) and the application of severity classification based on Risk Analysis Tool methodology (RAT).

In addition, as set out in the NATS Safety Plan, we have an internal target for the period January 2015 to December 2019 (RP2) which is:

A reduction in safety risk, the accident risk per flight, in line with traffic growth during RP2. Based on the current traffic forecast, the target reduction is 13%.

This is the equivalent of maintaining our outturn performance at the same level from beginning to end of the period. This target is based on the Risk Analysis Tool (RAT) methodology.

##### > Capacity

The UK component of the FAB Plan meets EU wide targets for En-Route ATFM delay per flight.

NERL is incentivised according to performance in the following areas:

- NERL attributable en-route ATFM delay per flight (bonus or penalty);
- Impact of individual delays – a measure that reflects the time of day that delays occur, together with the length of delays (bonus or penalty);
- Delay variability – sensitive to days with significantly higher than average delay (penalty only).

##### > Environment

The UK component of the FAB Plan meets EU wide targets for Environmental performance which are based on the average horizontal flight efficiency of last filed flight plan (KEP) and average actual horizontal flight efficiency (KEA).

NATS is uniquely incentivised on environmental performance through the 3D inefficiency metric. The 3Di metric accurately measures the efficiency of every flight in UK airspace in three dimensions, helping us to

ensure that we route flight paths as close to the environmental optimum as possible.

##### > Cost-efficiency

The UK component of the FAB plan significantly out performs the Commission's cost efficiency target for RP2, projecting a 4.5% per annum real reduction in Determined Unit Cost (against an EU wide target of 3.3% per annum). This drives a projected price reduction of 21% in real terms by the end of RP2 (2019) relative to the price at the end of RP1.

#### OPA Priorities – Calendar Year 2015

In addition to the SES targets for the regulatory period, NATS agrees with the OPA a set of targets for the forthcoming year. Those agreed for (calendar year) 2015 are as follows:

	Target	Stretch
<b>OPA1 Fuel Savings Enabled Flight Efficiency Partnership</b> (tonnes fuel savings enabled)	10,000 T	15,000 T
<b>OPA2 STAM Regulations</b> (% <= 45 mins duration)	95%	96%
<b>Hotspot Projects</b>	5 Hotspot projects agreed for 2015 – see Section 3.5	

# 3. Forward Plan

## Plan

Continued

### 3.3 Significant Projects


**Deploying SESAR Programme**  
En-Route



Deploying SESAR will transform our operations in support of the Single European Sky, making our airspace and how we work more unified, agile and flexible. As a programme, Deploying SESAR enables NERL to both maximise the opportunity afforded to it within the RP2 framework to deliver as much progress as possible in delivering its strategy, and thereby entering RP3 with new technology and business associated practices, and processes to meet anticipated regulatory and customer expectations.

Today we have multiple operations across our centres supported by complex, but tried and tested technology platforms. The initial aim of the Deploying SESAR programme is to have common controller working positions, capable of supporting any role in any part of UK airspace in either of our centres and to replace our older legacy systems; this is in service of our the Any Controller, Any Workstation, Any Centre, Any Customer strategy.

**Temporary Ops Room**  
En-Route



The Temporary Ops Room is the first visible step in the Deploying SESAR programme at Swanwick as it will enable the current Area Control Ops Room to be decommissioned and then re-built for the Future Combined Area Control/Terminal Control Ops Room. The project team are on track to be able to commence transition activities in October 2015 as planned, with no impact to customers.

# 3. Forward Plan

## Continued

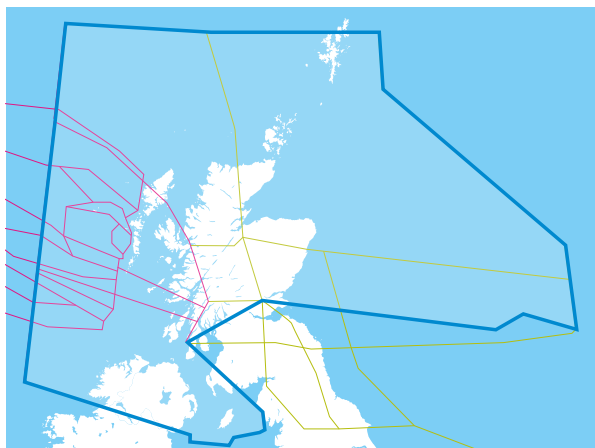
**Prestwick Centre Upper Airspace**  
En-Route



The Prestwick Centre Upper Airspace (PCUA) programme is on track to introduce trajectory-based operations into a limited volume of NATS airspace by winter 2016/2017. This is the first stage of deploying SESAR and represents a significant investment in Prestwick's future capability to safely handle increased traffic more efficiently. Trajectory based-operations using an iTEC Flight Data Processing (FDP) system will reduce controller workload, provide automated conflict detection and support greater overall traffic capacity in UK airspace and integration with the wider ATM network. iTEC is fully in line with the European Commission's objectives to achieve a Single European Sky (SES) and is a key enabler for delivering the benefits of SESAR. The PC Upper Airspace solution will provide the first step

towards NATS having a common workstation. Limited operational service is planned to start in January 2016 and increase through the spring of 2016 as staff are delivered out of the training programme.

Free Route Airspace (FRA) allows airlines to plan their routes freely between an entry point an exit point without reference to the route network providing increased efficiency, greater flexibility and reducing fuel burn and hence costs for customers. The FRA work in Prestwick will be one of the stepping stones towards the wider Borealis FRA for 2017.



**Free Route Airspace** in Rathlin, Central, Hebrides High, Moray High, Tyne, Montrose North

FRA work in Prestwick will be one of the stepping stones towards the wider Borealis FRA for 2017

# 3. Forward Plan

## Continued

**Airspace  
Modernisation**  
Terminal Airspace  
Interface



**London Airspace Management Programme (LAMP)** - Phase 1a is planned for implementation in February 2016 and will see the introduction of Performance Based Navigation arrival and departure routes for London City together with two new holding stacks and additional Controlled Airspace. In addition there will also be some small changes to routes serving Gatwick and Stansted, a new contingency hold for Solent traffic and a change to Lydd Area Control sector.

**Northern Terminal Control Area** – a major redevelopment of terminal airspace in northern England in line with FAS (PBN design) to improve flight efficiency and capacity.

Both LAMP & NTCA have dependencies:

- > Transition Altitude;
- > PBN mandate (CAA);
- > Airport decisions for low level departure routes (new SIDs).

We are reviewing the planning for later phases of LAMP, Northern Terminal Control Area and Transition Altitude with UK CAA and Department for Transport in light of emerging policy.

### Scottish TMA Redevelopment

Edinburgh, Glasgow and Glasgow Prestwick airports have formed a Scottish Terminal Development and Deployment Group (SDDG) with representatives from NATS, airlines and the MOD. Aberdeen and the Highlands and Islands airports are kept closely informed of the SDDG's activities.

The SDDG aims to ensure that capacity is developed and deployed to meet future demands within the Scottish TMA. During its first year, the group have analysed the causes of high departure delays in the morning period and modeled the impacts on terminal and network performance

of additional traffic growth in the region. Based on their analysis the group have established a programme of airspace and runway optimisation measures, including redesigning departure and arrival routes using PBN and the procurement of airport departure sequencing tools. A NATS led feasibility and options study for a full redesign of the Scottish TMA airspace structure and route network is underway based on the Group's assessment of the potential benefits.

The outputs from the SDDG's programme will be mapped into the latest version of the FAS Deployment Plan, allowing for a single aligned Scottish view to be represented.

# 3. Forward Plan

## Continued

**Oceanic Strategy**  
Oceanic

**ICAO FANS Mandate**

Phase 2A of the ICAO FANS mandate commenced on 5th February 2015. This is applicable to all aircraft operating on/at any point along the tracks within the North Atlantic (NAT) Organised Track System (OTS) and requires aircraft to be equipped with and operate CPDLC and ADS-C.

The next phase (Phase 2B) of the mandate comes into effect on 7th December 2017 and will be applicable for all traffic operating from FL350 to FL390 (inclusive) throughout the NAT Region.

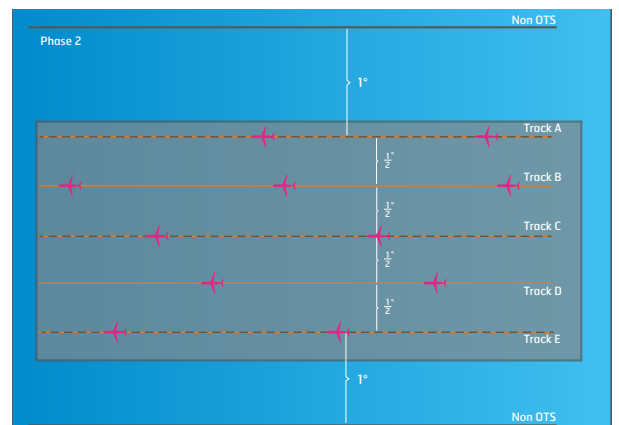
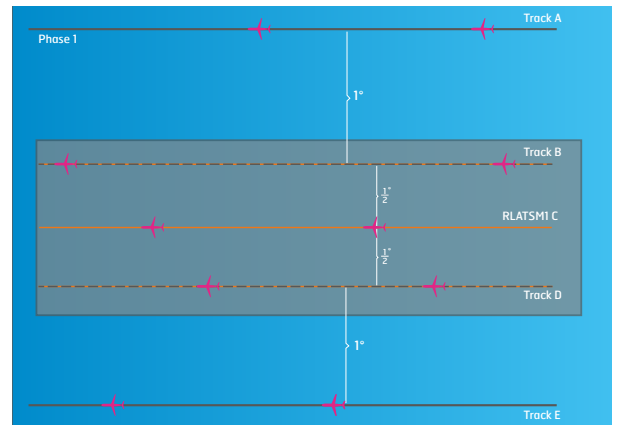
The final phase (Phase 2C), commencing 30 Jan 2020 will see the mandate extended to FL290 and above throughout the ICAO NAT Region.

**Reduced Lateral Separation Minima within Shanwick / Gander Airspace**

Reduced Lateral Separation (RLat) will allow aircraft to be separated laterally by a minimum of 25 Nm, improving the efficiency of NAT operations. In practice, flights will be separated by 1/2 degree of latitude rather than the 1 degree currently applied between Minimum Navigation Performance Specifications (MNPS) aircraft. The first phase of RLat within Shanwick/Gander airspace is planned to commence on 12th Nov 2015. This will trial the introduction of a single uni-directional track between the core OTS tracks.

The ICAO North Atlantic Systems Planning Group (NAT SPG), has advised that it expects that Phase 2 of the trial, which will see reduced lateral separation be expanded across all organised tracks, to take place “within around a year” of Phase 1 introduction.

The final phase which would see the expansion of the trial across the entire Shanwick / Gander airspace has not yet been planned.



# 3. Forward Plan

## Plan

Continued

### Data Network Modernisation Network



Deploys a replacement data network infrastructure that interconnects ATC centres, radar sites, communication sites and major airports – accommodates higher data flows in SESAR concepts while containing operating costs:

- > Based on Internet Protocol (IP) technology which is the SESAR standard for data communications;

- > Design and testing of new network over last 2 years with supplier;
- > A period of limited operational service was successfully completed in December 2014;
- > The full phased transition into service is planned to complete by January 2016 with no expected impact to customers.

### DVOR Replacement Network



The DVOR replacement programme continues with the sites for 2015 being Lands' End, Talla, Seaford, Compton and Aberdeen. As part of the rationalisation project, plans are to remove Turnberry, Glasgow, Perth, Benbecula and Inverness en-route procedures and remove New Galloway Non-Directional Beacon (NDB) from service by March 2016.

### Airport Integration into ATM Network Network



Building on the work undertaken to date (see Section 2.3) to develop a DPI solution for airfields without EFPS systems through a TSC funded project, DPI will be rolled out to 4 regional airports by March 2016. The project is seeking FAS funding to extend the roll-out to up to an additional 20 airports by 2017. If successful, this could see the provision of DPI messages for over

80% of UK commercial air transport flights.

The upgrades involve connecting UK regional airports to the European Network Manager to improve quality / coverage of real-time departure information.

# 3. Forward Plan

## Continued

### 3.4 New Safety Projects

Safety Project	Benefit Delivered
<b>Level Busts</b>	We will be looking at pre-flight briefing with a view to identifying any improvements that can be implemented to highlight Level Bust risk e.g. targeted briefings for bizjet operators during periods of low atmospheric pressure.
<b>Infringements</b>	Over the coming months detailed local plans for the 5 infringement hotspots will begin to be delivered involving key stakeholders from the GA community, MOD, ANSPs and CAA. The NATS Safety team will continue to support this work alongside which we will identify the potential procedural and airspace changes that could be implemented if the improvement targets are not met.
<b>Infringements</b>	LPAT will complete fly trials in early Q2 2015, after which we will be working with the CAA for formal endorsement. We will then have a range of options for taking the technology forward. We will also be exploring how best to integrate the data into the NATS operational systems, and how we can support the proliferation of electronic conspicuity within the general aviation fleet.
<b>Pilot/Controller Interface</b>	NATS will be developing a set of common training materials to be published and used to train airline personnel who are responsible for incident investigation in their airlines. In partnership with Virgin Atlantic, NATS will deploy the Day 2 Day safety survey approach developed with them during 2014. We will also continue to work with Flybe on the Flybe Line Orientated Safety Survey (FLOSS) programme.
<b>Ground Safety</b>	We will create ground safety risk awareness materials for use across units for use with ground crews, pilots and ATC. Anticipated areas of focus include the role of the ground crew as a safety net, airfield ground safety 'hotspots', wingtip collision risk and defensive controlling/taxiing measures.
<b>Civil/Military Interface</b>	NATS will continue to engage with UK/NATO exercise planners to ensure that exercises can be conducted by the military within shared UK airspace in a co-operative, efficient, mission successful, and safe manner.

# 3. Forward Plan

## Continued

### 3.5 2015 OPA Hotspot Projects

2014 Hotspot	Objective
<b>Pre-tactical Planning</b>	Improvements to the pre-tactical and seasonal planning process through enhanced demand data to feed into the resource planning process.
<b>Oceanic Flight Efficiency</b>	Improved flight level profiles for aircraft operating within Shanwick Oceanic Airspace through the use of ATC system tools and system adaptation; increased intelligence regarding flight planning predictability to assist ATC with OTS design and traffic planning.
<b>Conditional Route (CDR) Usage</b>	Optimise the availability and facilitate increased airline operator uptake of CDRs using new tools, Eurocontrol and improved Flexible Use of Airspace (FUA) processes. Specifically to deliver improvements to the availability of key CDRs/DCTs and review the pre-tactical process for civil requests for Military Danger Area (MDA) suppression, identify improvements and update the process.
<b>Mass Diversions</b>	Identify the issues surrounding these events which affect all parties involved (ATC, airport, airline) in multiple diversion scenarios and identify potential solutions to improve the way multiple diversion scenarios are handled, including implementation of a thunderstorm sector map and re-route guidance.
<b>PBN Track Keeping</b>	Provide overarching management and tracking of the threads pertaining to PBN technical issues to ensure effective composite solutions are delivered and the Airspace Change Proposals (ACPs) are de-risked.



# 3. Forward Plan

## Continued

### 3.6 Future Airspace Strategy


Sustainable growth in aviation is dependent on the modernisation of our airspace system to tackle key areas of inefficiency and generate significant benefits for passengers, industry and the environment.

The UK Government’s Future Airspace Strategy (FAS) considers the modernisation of the UK Air Traffic Management (ATM) System that includes the structure of UK airspace, the routes aircraft fly and the procedures and technology used to safely separate aircraft and expedite the flow of traffic.

NATS co-chairs (with British Airways) the Future Airspace Strategy Industry Implementation Group (FASIIG) and co-chairs the Future Airspace Strategy Deployment Steering Group (DSG), which includes representatives from airlines, airports, business aviation, general aviation, CAA, Government and MOD.

The Department for Transport (DfT) are working with the industry to assess the National Strategic Case for the FAS to modernise the UK’s airspace and ATM infrastructure. The Strategic Case for FAS is based on modelling undertaken by NATS that estimates the impact of forecast traffic growth and current airspace capacity constraints will result in a c.30 fold increase in average delays per flight by 2030 if FAS projects are not deployed successfully.

The key FAS initiatives and NATS input to these are shown below:





FAS Initiative	Scope & NATS input
<b>UK Wide PBN Implementation</b> 	Aligning investments in PBN routes across UK airports with improvements in fleet capability and the development of advanced airspace design concepts: <ul style="list-style-type: none"> <li>&gt; Edinburgh Reduced Departure Interval PBN Trial;</li> <li>&gt; Glasgow PBN Route Upgrades to enable VoR Rationalisation;</li> <li>&gt; Heathrow Low Level PBN SIDs and STARs;</li> <li>&gt; Stansted RNP1 Trial;</li> <li>&gt; Departure Enhancement Programme Phase 2.</li> </ul>
<b>Terminal Airspace Re-Design</b> 	Implementing a more efficient route structure in the TMA to systemise arrival and departure routes: <ul style="list-style-type: none"> <li>&gt; LAMP Phase 1a: London City, Thames Point Merge and Stansted;</li> <li>&gt; NTCA Airspace Redesign Programme;</li> <li>&gt; Scottish TMA Airspace Redesign (brought forward into RP2).</li> </ul>
<b>Airspace and Noise</b> 	Alongside the aviation and broader economic benefits of modernising airspace there is one significant external cost –the impacts of redistributing aircraft noise: <ul style="list-style-type: none"> <li>&gt; DfT programme of policy and communications to clarify the approach to managing the impact of noise;</li> <li>&gt; CAA chaired taskforce of Government and Industry to consider airspace concepts that may reduce noise or offer respite.</li> </ul>
<b>Airport Departure Planning Information</b> 	Increase electronic integration of UK airports into the ATM network, improving the quality of traffic flow information: <ul style="list-style-type: none"> <li>&gt; Transport Systems Catapult sponsored DPI project working to deploy solutions at regional airports.</li> </ul>

# 3. Forward Plan

## Continued

### Airports Commission

The Airports Commission is now making recommendations on how to maintain the UK's position as a hub for international air traffic. Its interim report short-listed 3 proposals for an additional runway in the southeast by 2030. It also recommended immediate actions to improve the use of existing runway capacity, these actions are mostly being included in FAS. In addition to our leading role in delivering FAS, our key priority is to address operational deliverability of short-listed new runway options ahead of the Commission's preferred option being announced in Summer 2015.

FAS Initiative	Scope & NATS input
<b>Queue &amp; Arrival Management</b> 	Expanding the AMAN capability across FAB boundaries (XMAN) and integrating Departure Management (DMAN) capabilities to de-conflict outbound traffic flows: <ul style="list-style-type: none"> <li>&gt; XMAN (Arrival Management coordinated across multiple ANSPs) Phase 4 Trials;</li> <li>&gt; Concept development of integrated AMAN and Departure Manager at Heathrow;</li> <li>&gt; Review of requirements for basic AMAN at other large UK airports.</li> </ul>
<b>Enhanced Flexible Use of Airspace</b> 	Strengthening the toolsets and processes used for reserving temporary airspace and increasing use for civil use: <ul style="list-style-type: none"> <li>&gt; Development of a Joint Civil/Mil UK Concept of Operations for Advanced FUA;</li> <li>&gt; Trial of LARA airspace booking tool in Military Outstations, provided remotely from Swanwick.</li> </ul>
<b>Direct and Free Route Airspace</b> 	Implementing multiple direct routes that allow airlines to optimise their flight plans through the upper airspace, leading ultimately to route free airspace that allows airlines to flight plan freely without reference to any published way points: <ul style="list-style-type: none"> <li>&gt; Direct Route Airspace in Prestwick Upper Airspace;</li> <li>&gt; iTEC enabled Direct and Free Route Airspace in Prestwick Upper.</li> </ul>
<b>Network Management</b> 	Supporting development of European Network Manager's capability to optimise network operations, including scheduling, flight planning and punctuality

# 3. Forward Plan

## Continued

### 3.7 Collaboration with other ANSPs

#### A6 Group of ANSPs

The A6 is an alliance of some of the main European Air Navigation Service Providers (ANSPs). Its aim is to help drive modernisation of the European ATM network within the SESAR programme for the benefit of customers. Its role is to create synergies between the ANSP members of the SESAR Joint Undertaking to maximise customer and network benefits and to provide leadership at a European level in critical technical and strategic areas.

Cross industry collaboration lies at the heart of the creation of a successful and competitive European aviation industry. The A6 members are full members of the SESAR Joint Undertaking, making the A6 uniquely placed to represent the interests of the ATM industry in the effective deployment of technologies and concepts developed through the SESAR programme.

The A6 Alliance is part of the SESAR Deployment Alliance, which was recently appointed SESAR Deployment Manager by the European Commission. The SESAR Deployment Manager will ensure that new technologies and solutions that have already been tested and validated through the SESAR Joint Undertaking are delivered into everyday operations across Europe, delivering significant

benefits to airspace users and the environment. The SESAR Deployment Alliance, comprised of the A6 Alliance of ANSPs, the A4 airlines and the SESAR-related Deployment Airport Operators Group (SDAG), will coordinate and synchronise for an initial 6-year period the work of ensuring Europe maintains its competitive edge.

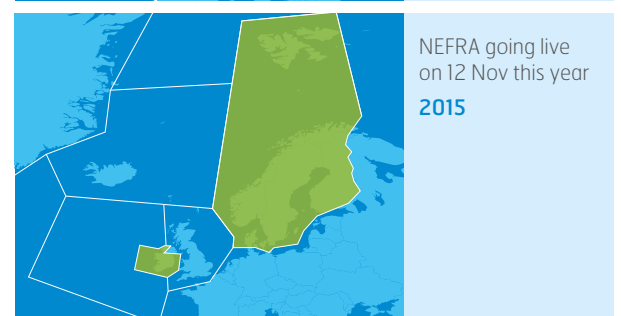
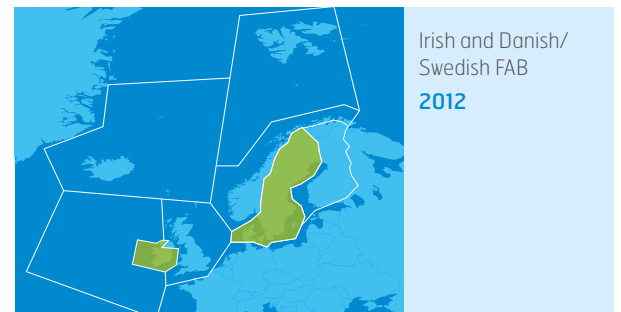
#### Borealis ANSP Alliance

The Borealis Alliance is a leading Alliance of ANSPs that enables its Members to drive better performance for stakeholders through business collaboration.

The Alliance includes the ANSPs of Denmark, Estonia, Finland, Iceland, Ireland, Latvia, Norway, Sweden and the UK. Combined, they provide air traffic services for 3.7m flights a year, across 12.5 million km<sup>2</sup> of north European airspace, between them forming Europe's major transatlantic gateway.

The Borealis Alliance is currently working on a major programme to deliver free route airspace across the whole of Northern Europe by 2020. The programme will create free route airspace extending from the eastern boundary of the North Atlantic to the western boundary of Russian airspace in the north of Europe, delivering significant customer

benefits in terms of fuel efficiency, environmental performance and cost savings. The Alliance will be engaging with customers and stakeholders throughout the programme.



# 3. Forward Plan

## Continued

### 3.8 Deploying SESAR across Europe

SESAR is one of the most ambitious integrated programmes ever launched in Europe and will be deployed through the Pilot Common Projects (PCP) concept for synchronised cross-industry implementation of key programmes, orchestrated by the SESAR Deployment Manager. The PCP Implementing Rules, and any subsequent Common Projects (CPs), as specified through future regulations, are the formal legal instrument that will enable EU funding for SESAR deployment.

The SESAR Deployment Manager (SDM) will ensure efficient synchronisation and coordination of implementation projects required to implement the PCPs and subsequent CPs, as well as the related investments.

The 4 core ATM functionalities currently proposed in the PCP are consistent with our FAS Deployment:

- > Extended AMAN and PBN in high density TMA;
- > Airport Integration and Throughput;
- > Flexible Airspace Management & Free Route;
- > Network Collaborative Management.

# 4. Contacts



## 4. Contacts

Continued

If you would like further information on our customer engagement forums or to discuss anything in this report, or any element of our service delivery, please contact our Customer Affairs team at the following contacts:

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**Resources**

Our dedicated customer website **[www.customer.nats.co.uk](http://www.customer.nats.co.uk)** provides the latest news, operational information, meeting details and materials, contacts and links to other resources. Customers are also able to register for updates from ATICCC our Air Traffic Incident Communication and Coordination Cell which is activated during any periods of significant network disruption.

**Engagement forums**

We have a number of forums for engaging with customers including the Operational Partnership Agreement, Flight Efficiency Partnership, Safety Partnership Agreement and Service & Investment Plan Consultation.

# 5. Acronyms



# 5. Acronyms

<b>3Di</b>	3 Dimensional Inefficiency	<b>FAB</b>	Functional Airspace Block	<b>PBN</b>	Performance Based Navigation
<b>ACP</b>	Airspace Change Proposal	<b>FASIIG</b>	Future Airspace Strategy Industry Implementation Group	<b>PCP</b>	Pilot Common Project
<b>ADS-B</b>	Automatic Dependent Surveillance - Broadcast	<b>FEP</b>	Flight Efficiency Partnership	<b>RAT</b>	Risk Analysis Tool
<b>ADS-C</b>	Automatic Dependent Surveillance - Contract	<b>FDP</b>	Flight Data Processing	<b>RNAV</b>	Area Navigation
<b>AIWG</b>	Airspace Infringement Working Group	<b>FLOSS</b>	Flybe Line Orientated Safety Survey	<b>RP2</b>	Reference Period 2
<b>AMAN</b>	Arrival Management	<b>FUA</b>	Flexible Use of Airspace	<b>SAMOS</b>	Semi Automatic Meteorological Observation System
<b>AOA</b>	Airport Operators Association	<b>GA</b>	General Aviation	<b>SCIPS</b>	Sensor Controlled Incurion Protection System
<b>ATFCM</b>	Air Traffic Flow and Capacity Management	<b>GAATS+</b>	Gander Automated Air Traffic System	<b>SDDG</b>	Scottish Terminal Design and Deployment Group
<b>ATICCC</b>	Air Traffic Incident Communication and Coordination Cell	<b>IAA</b>	Irish Aviation Authority	<b>SDM</b>	SESAR Deployment Manager
<b>CAA</b>	Civil Aviation Authority	<b>iTEC</b>	Interoperability Through European Collaboration	<b>SES</b>	Single European Sky
<b>CDO</b>	Continuous Descent Operations	<b>JTEPS</b>	Joint Tactical Exercise Planning Staff	<b>SESAR</b>	Single European Sky ATM Research
<b>CDR</b>	Conditional Route	<b>LAMP</b>	London Airspace Management Programme	<b>SID</b>	Standard Instrument Departure
<b>CP</b>	Common Project	<b>LARA</b>	Local and Regional Airspace	<b>SIP</b>	Service and Investment Plan
<b>CPDLC</b>	Controller Pilot Datalink Communications	<b>LPAT</b>	Low Power ADB-S Transceiver	<b>SPA</b>	Safety Partnership Agreement
<b>COAST</b>	Collaboration an Oceanic Airspace & System Tools	<b>MDA</b>	Military Danger Area	<b>SSE</b>	Safety Significant Event
<b>DCT</b>	Direct	<b>MNPS</b>	Minimum Navigation Performance Specifications	<b>STAM</b>	Short Term ATFCM Measure
<b>DEP</b>	Departure Enhancement Programme	<b>MOD</b>	Ministry of Defence	<b>SWIM</b>	System Wide Information Management
<b>DRA</b>	Direct Route Airspace	<b>NAT</b>	North Atlantic	<b>TA</b>	Transition Altitude
<b>DSG</b>	Deployment Steering Group	<b>NATO</b>	North Atlantic Treaty Organisation	<b>TBS</b>	Time Based Separation
<b>DSOT</b>	Dynamic Sectorisation Operational Trial	<b>NATSPG</b>	North Atlantic Systems Planning Group	<b>TMA</b>	Terminal Manoeuvring Area
<b>DVOR</b>	Digital Very High Frequency Omni-directional Radio Range	<b>NPS</b>	Net Promoter Score	<b>TSC</b>	Transport Systems Catapult
<b>EASA</b>	European Aviation Safety Agency	<b>NMOC</b>	Network Management Operations Centre	<b>XMAN</b>	Extended Arrival Management
<b>EC</b>	European Commission	<b>NTCA</b>	Northern Terminal Control Area		
<b>EoSM</b>	Effectiveness of Safety Management	<b>OPA</b>	Operational Partnership Agreement		
		<b>OTS</b>	Organised Track Structure		



# Appendix

## 2014 Airline and Business Aviation Customer Survey Results

Category / Question	Importance	Delivery
<b>Safety</b>		
Proactive management of safety	9.73	8.93
Provision of timely and effective responses to safety events	9.47	8.87
Provision of relevant quarterly safety statistics(*)	8.82	8.82
Working with customers to drive safety improvements	9.37	9.07
<b>Operational Performance</b>		
Service Delivery from Domestic En-Route Control	8.96	8.71
Service Delivery from Prestwick Oceanic Control	8.91	9.00
Daily tactical operational support from ACM (UKFMP)	8.65	8.62
Provision of relevant and timely responses to queries	8.79	8.90
Minimisation of the impact during project delivery (*)	9.33	8.50
NATS technical systems' resilience	9.59	8.22
Management of any periods of disruption	9.48	8.59
Provision of relevant information via ATICCC and feedback following any event	9.07	8.76
<b>Environment</b>		
Flight Efficiency Partnership	8.82	8.29
Collaborating with industry partners to drive fuel and emissions saving opportunities	9.29	7.89
Communication of NATS' environmental programme	8.18	8.14

(\*) Question asked only of those customers with whom NATS has regular interaction

# Appendix

## 2014 Airline and Business Aviation Customer Survey Results Cont'd

Category / Question	Importance	Delivery
<b>Customer Engagement &amp; Consultation</b>		
Taking a leading role in delivering positive change within the industry	9.07	8.53
Management of the SIP14 consultation (*)	8.40	8.40
FASIG (*)	9.00	8.60
Operational Partnership Agreement (*)	8.42	8.17
Safety Partnership Agreement (*)	7.63	7.63
Effectiveness of airspace stakeholder engagement (*)	9.10	8.59
Customer bi-lateral meetings (*)	8.80	8.10
Usefulness and format of NATS customer website	7.82	7.93
<b>Other</b>		
Issues raised in 2013 survey addressed	N/A	8.21
Overall value	N/A	7.43
How likely are you to speak positively about NATS**	N/A	+77
<b>UK/Ireland FAB</b>		
Customer Engagement in the UK/Ireland FAB (*)	7.64	6.27

(\*) Question asked only of those customers with whom NATS has regular interaction

\*\* 'Net Promoter' style question – different scoring mechanism used