

NATS (En Route) plc Service and Investment Plan 2017

Independent Reviewer Report

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NOTE

This document has been produced for the CAA as part of Condition 10 to the NATS (En Route) [NERL] Licence and is based on observations and research between 1 Sep 16 – 17 Jan 17 by Grant Bremer.

This report summarises the author's findings and opinions and represents a snapshot of the situation as of 17 Jan 17.

Background

Condition 10(3) of the NATS (En Route) plc [NERL] Air Traffic Services Licence dated 29 June 2016 requires NERL to prepare a Service and Investment Plan (SIP) that refers to the most recent Business Plan and the related Airspace and Technology plans each year. Condition 10(11) says the SIP shall provide an update of NERL's investment plans, including Technology and Airspace programmes, with an update of delivery against previously provided programme milestones and any material changes in the expected levels and quality of services provided by NERL as well as any likely implications for User charges beyond the current Reference Period (RP2). Additionally, when approving NERL's SIP for 2016, the Civil Aviation Authority (CAA) stated that¹:

- Where NERL is proposing to change service and investment plans, it should clearly articulate not only the rationale for change, but also provide options and associated costs/benefits for consideration by airlines at the earliest possible opportunity;
- The SIP should explicitly articulate airlines' feedback/view on proposals, along with NERL's response;
- The SIP should set out performance against all individual key performance indicators (note that the 2016 SIP does not report KEA performance);
- The SIP should provide forecast unit costs and charges profiles for the current and following reference period, based on current assumptions;
- Where projects and programmes are renamed and/or combined, appropriate and clear links between the old and new should be articulated.

Reference Period 2 (RP2) Business Plan

The current NERL Business Plan² covers the period to 31 Dec 19. The Business Plan outlined the SIP approach and defined 9 programme areas³:

- Airspace Development;
- Centres Systems Software Development;
- CNS Infrastructure;
- Safety Nets and Airspace Efficiency;
- Environment (CO₂ and Fuel Savings);
- iTEC FDP;
- Development of SAATS;
- Facilities Management;
- Military.

In the published Business Plan, the capital investment was assessed to be £575m, in 2012 prices, including an additional £15m for the LAMP and NCTA airspace programmes compared to the low case plan. The investment programme forecast benefits were⁴:

Benefit Category	Estimated Benefit Enabled by RP2 Investment
Safety	43 point reduction in NERL weighted SSE Index
Fuel Savings	c1m tonnes CO ₂ pa (inc Oceanic airspace and airports)
Service Capacity	20-25 extra flights per busy hour
Operating Costs	c£10m pa reduction
Asset Sustainability	Reduction in net weighted business risk of c£520m
Carbon Footprint	Reduction of c34m tonnes CO ₂ pa across NATS estate

1. CAA Office of General Counsel [from David Stoplar] to NERL ref Licence Condition 10.7, dated 1 Jul 16.

2. NERL RP2 Revised Business Plan (2015-2019) dated 18 Oct 13.

3. NERL RP2 Revised Business Plan (2015-2019) dated 18 Oct 13, page 39.

4. NERL RP2 Revised Business Plan (2015-2019) dated 18 Oct 13, page 41.

The planned outputs for the investment were⁵:

	Output Dimension	Metric
Safety	Accident Risk per Flight	13% reduction
Price	Real reduction in cost base end RP2 v end RP1	-18%
Determined Costs	Cumulative determined cost savings during RP2 v end RP1	- £80m pa
Environment	CO2 Emissions Target (-10%/flight by 2020)	9% by 2019
	Annual Fuel Saving enabled by 2019 (v 2012) (exc. Oceanic & Airports)	£180m pa (277,000 T pa)
Service Delivery	Total ATFM Delay all causes (avg in RP2) (exc transition delay)	6-12 secs
	NERL En Route ATFM Delay (exc transition delay)	<6 secs
	Daily Delay >10,000 min	<5 days per year
	Airport ATFM Arrival Delays (mainly weather related)	c20% reduction
	Service Resilience Risk	Low Risk
Investment	Total RP2 investment (at 2012 prices)	£575m

The Business Plan also noted that NERL would manage the delivery of investments to committed cost, schedule and benefits) via the SIP process.

SIP16

In addition to accelerating some parts of the programme to reduce spending on legacy systems and equipment, the 2016 SIP (SIP16) updated costs to £620m in outturn prices and with updated inflation assumptions. SIP16 revised the programme areas to be:

- Airspace Development;
- Legacy Systems;
- Platform & Deployment;
- Trajectory Services;
- Critical Facilities;
- Comms, Info & Surv Services;
- Foundation Services;
- Facilities Management;
- CO₂ and Fuel Saving;
- Risk and Contingency;
- Oceanic;
- Military.

SIP16 also committed NERL to the following updated targets⁶ and asserted that all targets were on track for successful delivery, except the environmental targets that were all shown as at risk because of the impact of the delay to the LAMP programme⁷:

	Output Dimension	Metric
Safety	Accident Risk per Flight	13% reduction
Price	Real reduction in cost base end RP2 v end RP1	-21%
<i>Determined Costs</i>	<i>Cumulative determined cost savings during RP2 v end RP1</i>	<i>- £80m pa</i>
<i>Environment</i>	<i>CO2 Emissions Target (-10%/flight by 2020)</i>	<i>9% by 2019</i>
	<i>Annual Fuel Saving enabled by 2019 (v 2012) (exc. Oceanic & Airports)</i>	<i>£180m pa</i>

5. NERL RP2 Revised Business Plan (2015-2019) dated 18 Oct 13, page 3 and 16.

6. SIP16 Final Submission for CAA Submission (Issue 1.2), page 10.

7. SIP16 Final Submission for CAA Submission (Issue 1.2), page 52.

	Airports)	(275,000 T pa)
<i>Service Delivery</i>	<i>Total ATFM Delay all causes (avg in RP2) (exc transition delay)</i>	<i>6-12 secs</i>
	NERL En Route ATFM Delay (exc transition delay)	<6 secs
	<i>Daily Delay >10,000 min</i>	<i><5 days per year</i>
	Airport ATFM Arrival Delays (mainly weather related)	c20% reduction
	Service Resilience Risk	Low Risk
Investment	Total RP2 investment (at outturn prices) ⁸	£620m

Note: *Italicised targets are not specifically mentioned in SIP16, but are implicitly still valid.*

SIP17

After consultation with Customers, NERL provided SIP17 as a comprehensive slide deck/briefing pack to the CAA on 23 Dec 16.

The SIP17 pack covered a wide range of topics that provided appropriate and helpful context for SIP17. In particular, NERL highlighted that the original RP2 plan was based on a modest forecast in traffic growth and with high fuel prices⁹. However, since the RP2 plan was agreed fuel costs have unexpectedly halved, and summer 2016 saw unexpectedly high traffic levels neither of which had been forecast. There is also an emerging need to make service more resilient. NERL asserted that this is an additional and significant requirement that needs to be reflected within the delivery programme.

Considerable effort has been invested in developing more detailed and complete bottom-up plans for delivery of critical systems and capabilities. In further developing their plans NERL has an increased awareness of the complexity of managing transition and training especially in the context of higher than planned traffic volumes and that these essential areas need careful and close management. More detailed planning and costing of programmes, as well as the acceleration of the SESAR Programme, has allowed a more rigorous understanding of the costs needed to deliver success. The acceleration of SESAR deployment has allowed NERL to secure INEA funding of c£100m, with the possibility of a further £30m after the 2016 Award Cycle, which will offset the impact of increased capital expenditure associated with SIP17.

SIP17 Plan & Milestones

SIP17 outlines how NERL will deliver both the Airspace and Technology programmes through RP2. For the Airspace Programme the key planned milestones are¹⁰:

RP2 Milestone	Description	Completion
AS: Time Based Separation	Full Operational Service for LHR	May 15 ✓
AS: LAMP 1A	Airspace changes deployed including LCY Point Merge	Feb 16 ✓
AS: Swanwick Airspace Optimisation Project: Module 1	Changes to the AC Hurn Sectors to reduce track mileage for Gatwick and Heathrow arrivals	Nov 17
AS: PLAS Near Term	IoM / Antrim Changes with PBN route structure	Dec 17
AS: Swanwick Airspace Optimisation Project: Module 2	Introduction of higher level route for Gatwick arrivals from the North	Mar 18 [1]
AS: Enhanced TBS	RECAT EU separations to touchdown and Optimised Runway Deliver (ORD)	Mar 18

8. SIP16 Final Submission for CAA Submission (Issue 1.2), page 56.

9. NERL SIP 17, Final, dated 23 Dec 16, page 3.

10. NERL SIP 17, Final dated 23 Dec 16, page 50.

AS: Future Airspace Capability: ORTAC	Widening of the Brest / Jersey interface at ORTAC	Mar 18 [1]
AS: Future Airspace Capability: Shawbury	ATS Routes across Shawbury Triangle (known as MOSUN)	Mar 18 [1]
AS: Future Airspace Capability: Capital / Central	TC Capital / AC Central re-sectorisation	Mar 19 [1]
AS: AMAN Enhancements	AMAN enhancements required to support IPA delivered into operational service	Sep 19
AS: PLAS Medium Term	Manchester TMA airspace changes including Point Merge	Nov 19
AS: Independent Parallel Approach	Full Operational Service for LHR, subject to HAL commitment and public consultation	Nov 19

Note: [1] These projects are currently in their Feasibility & Options (F&O) phases – milestone/date will be confirmed upon completion of F&O.

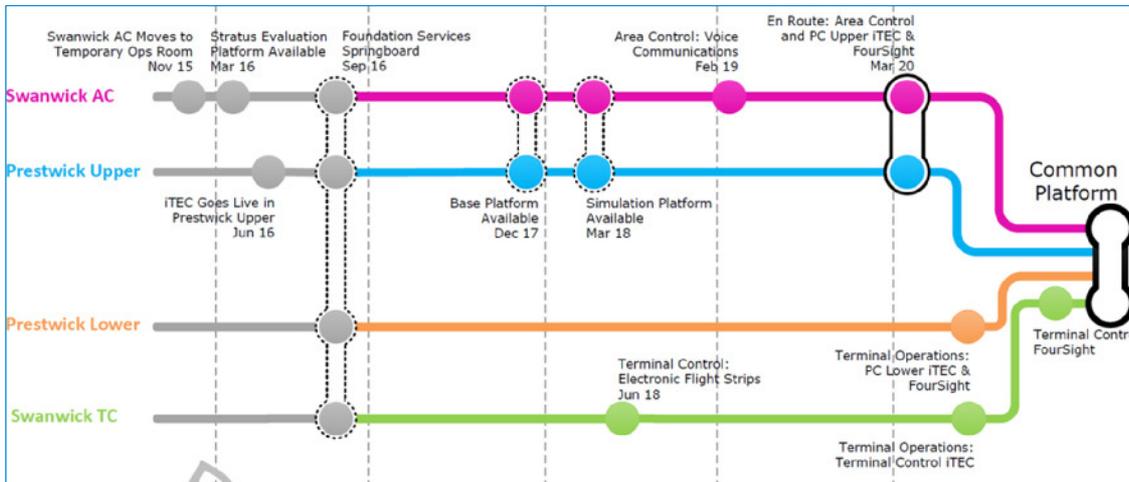
Whilst NERL has declared these Airspace milestones, no delivery plan that details how they will be delivered or what dependencies (technology or otherwise) were provided in SIP17, although NERL stated that these would be provided in the Airspace and Technology plans due for submission in March 2017.

The declared SIP17 Technology Programme key milestones and status are¹¹:

RP2 Milestone	Description	Completion
DP: Temporary Operations Room	Transition of Swanwick Area Control into the new Temporary Operations room creating the space within which the new combined operations room will be created	Nov 15 ✓
DP: iTEC PC Upper Airspace	Transition into Full Operational Service (FOS) of iTEC within Prestwick Upper Airspace	Jun 16 ✓
DP: Foundation Services Springboard	Test and Development facility allowing application testing to be carried out on the new infrastructure and network	Sep 16 ✓
DP: Base platform available	The full base platform service (applications and infrastructure services) will be created, but not introduced operationally	Dec 17
DP: Simulation platform available	A functionally representative simulation environment will be created using the new base platform allowing controllers and engineers to train on the new platform before it is introduced operationally	Mar 18
DP: Terminal Control: Electronic Flight Strips	Terminal Control move off paper flight strips onto electronic flight strips, providing immediate safety and efficiency benefits and a necessary stepping stone towards a full tool based operations	Jun 18
DP: Area Control Voice Communication	Area Control moves over to a new Voice over IP communications system together with a higher performance backup system	Feb 19
DP: En Route: Area Control & PC Upper iTEC	Area Control and military move into the combined ops room at Swanwick supported by iTEC and FourSight. Prestwick Upper Airspace moves onto the latest version of iTEC with FourSight, common across both centres	Mar 20

11. NERL SIP 17, Final dated 23 Dec 16, page 64.

These milestones are part of the overall Technology Plan that has a Baseline Deployment Schedule¹² of:



There is limited dependency mapping within this high-level schedule, but there is insufficient detail to assess the overall viability of the plan presented in SIP17, although some detail has been shared with the author independently.

The SIP17 pack also provided a financial update on the costs associated with delivery¹³:

RP2 SIP Programme, values in outturn prices £m	SIP 16	Revised RP2 Forecast	Variance (Fcast v SIP16 Plan)
Platform & Deployment	62	91	(29)
Trajectory Services	190	222	(32)
Comms, Info & Surv Services	69	99	(30)
Critical Facilities	35	38	(3)
Foundation Services	83	99	(16)
Airspace Development	68	65	3
Legacy Systems	56	71	(15)
Facilities Management	21	21	-
CO2 and Fuel Saving	5	5	-
Risk and Contingency	5	5	-
Oceanic	6	22	(16) ¹
Military	20	12	8
Total	620	750²	(130)

1. This figure has been subject to separate consultation - see slides 67-68. An update will be provided in 2017.
2. There remains uncertainty in the overall outturn costs of the programme within RP2 until the planning processes are complete. NATS estimates that the outturn will be in the range £750m- £780m.
3. Values are in outturn prices and reflect latest inflation forecasts. Actual values may differ due to changes in inflation
4. Of the £750m, c. £90m relates to un-hedged non sterling expenditure (mainly Euro, assumed rate of £1 = €1.11)

Reporting

The SIP17 pack reported on Service delivery and Investment Performance through 2016. The Service Delivery element of reporting appears to be comprehensive and provides a good overview of NERL performance during the year as required by the CAA¹⁴.

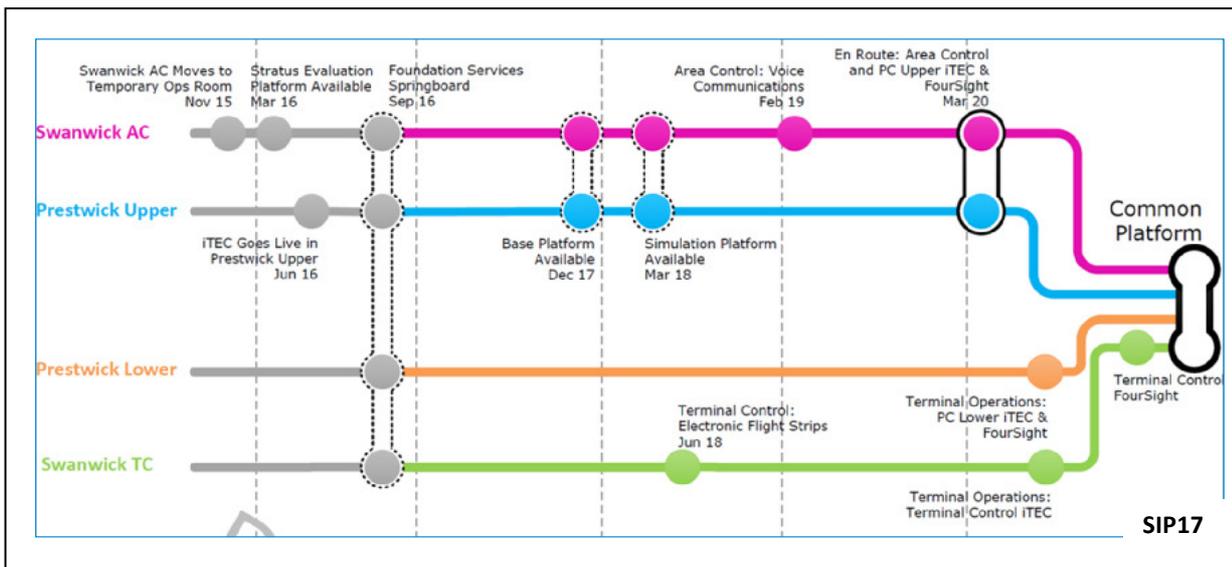
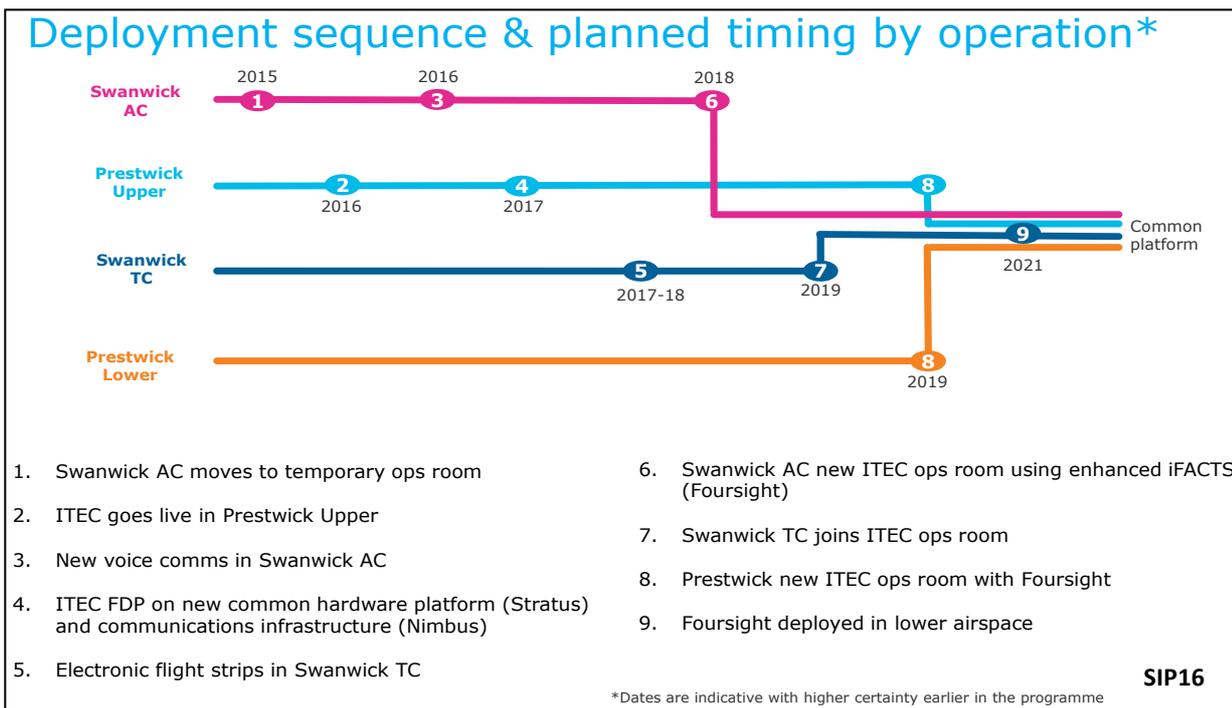
In terms of reporting on the progress of SIP16 delivery, SIP17 does not specifically highlight progress against SIP16 milestones, although a key element of the SIP17 was to describe changes to the Technology Plan and why this had changed. However, sufficient data is provided to allow such

12. NERL SIP 17, Final dated 23 Dec 16, page 63.

13. NERL SIP 17, Final dated 23 Dec 16, page 70.

14. CAA Office of General Counsel [from David Stoplar] to NERL ref Licence Condition 10.7, dated 1 Jul 16.

a comparison of the SIP16 Deployment Sequence¹⁵ and the revised schedule detailed in SIP17. The key deployment dates in SIP16 compared with SIP17 are:



Deployment Point	SIP16 Date	SIP17 Date	Slippage	Comment
1. Swanwick AC to Temp Ops Room	2015	Nov 15	Nil	Complete
2. iTEC live in Prestwick Upper	2016	Jun 16	Nil	Complete
3. Swanwick AC new Voice Comms	2016	Feb 19	26 months+	--
4. FDP on Stratus/Nimbus	2017	Mar 18	3 months+	This capability will no longer go live, but is replaced by the simulation platform available as a milestone towards [6]

15. SIP16 Final for CAA Submission (Issue 1.2), page 17.

5. Electronic flight strips in Swanwick TC	2017-18	Jun 18	--	--
6. Swanwick Ops Room using iTEC/FourSight	2018	Mar 20	15 months+	--
7. Swanwick TC join iTEC	2019	2020+ (RP3)	12 months+	--
8. Prestwick on FourSight	2019	2020+ (RP3)	12 months+	--
9. FourSight in Lower Airspace	2021	2020+ (RP3)	--	--

NERL felt that it had been clear through SIP 16 and the interim SIP that the Deploying SESAR programme was at an early stage of development and that the plans and costs were indicative, especially for the later elements of the programme. However, it is clear that this situation does not appear to have been understood or appreciated by either the CAA or Customers at the time and only became apparent on 1 Nov 16 at the first SIP17 Consultation event.

There was little analysis or explanation of the delay in the delivery milestones beyond¹⁶ “where the dates have changed this reflects the development of the detailed integrated plan based on the “Most Likely” deployment dates”. In part, this explanation reflects the previous comment regarding the emerging complexity of transition and training for new systems. In line with best practice of integration of users and delivery teams, it appears that some operational staff are actively engaged with, and supporting, programme/project delivery. To ensure that any surge in live operations does not have direct and negative impact on programme/project delivery, and to ensure that there are sufficient trained personnel available to support transition and training, it would be appropriate for NERL to share their workforce planning as a key supporting element to the SIP. Given the lead-time for the recruitment and training of controllers it is important that this element of planning is developed and implemented in parallel with the investment plan. NERL have stated that while this was not something that had been included in the SIP, further information will be provided in the forthcoming Airspace and Technology plans to respond to the requirement for “an explanation of where training and deployment activities may impact service quality”.

Consultation

The SIP17 consultation process has been well detailed in the SIP17 pack. NERL has engaged with its primary Customers, noted the feedback on the emerging SIP17 plan, and responded to the wide range of queries that were raised. The Customer Consultation period ran from 25 Oct 16 to 14 Dec 16 and was a combination of face to face briefings with open “Q&A” sessions supported by written updates and webinars. The 6 key issues that Customers raised during the Consultation, and the highlights of NERL’s response, were:

Issue	NERL Response
Confirmation that LAMP2 needs to be delivered at the earliest opportunity	NATS has proposed a revised Airspace Plan to increase capacity and deliver fuel efficiencies in RP2, with some early elements of LAMP2, but the remainder of LAMP2 is dependent on new technology and will be delivered in RP3
The need to provide transparency and detail to customers on the Deploying SESAR Programme, to facilitate an understanding	NATS proposes more frequent and deeper customer engagement over RP2 to provide customers with greater visibility of the capital

16. NERL SIP 17, Final dated 23 Dec 16, page 60.

of the status/risks of the programme, and status of capital expenditure, and to provide assurance that the plan is delivering value	investment programme, including Quarterly reviews; deep dive reviews and engagement with the CAA-appointed Independent Reviewer to help develop a transparent and effective investment reporting regime
The need to justify the increase in RP2 capex envelope from £620m to £750m-£780m, and to explain the dis-benefits of constraining RP2 capex to £620m, and to describe alternative options that had been considered	NATS concluded that holding to £620m would delay the benefits of key milestone deliveries by 2 to 3 years, and result in: Investment in legacy systems with known limited life and thus pay-back, estimated to add £50m to overall lifecycle costs; Jeopardising NATS ability to meet the requirements of the Pilot Common Project; Customers not fully benefiting from the INEA co-funding secured by NATS under the 2014 and 2015 Award Cycles, c£50m of which is linked to development milestones included in the £750m-£780m plan; Increasing the risk of system outages and corresponding impacts on service delivery
A description of the £750m-£780m plan's expected impact on user charges, compared to the £620m plan, is necessary	RP2 User Charges will not be affected. RP3-RP5 prices are likely to be lower if funding is agreed for the revised [£750-780m] plan
Customers raised concerns over the SENATE investment as part of the Oceanic Consultation	Customer could not support SENATE investment yet so NATS will re-plan and re-consult in 2017
Clarity on the use and treatment of the INEA funding is required	Specific guidance from the Commission on the use and treatment of INEA funds is expected in 2017 but NATS believe that position is that it should be no better and no worse off from receiving INEA funding. However NATS recognise that customers would like INEA funding to be returned relatively quickly (i.e. more quickly than 15 years), and will engage with regulators and customers to agree an appropriate approach

Findings

NERL's SIP17 provided a detailed update on many aspects of service delivery and investment plans for RP2 under SIP17. In terms of the specific requirements of Condition 10 and the CAA's letter of 1 Jul 16, NERL has provided:

- An update of investment plans, including Technology and Airspace programmes. However NERL, based on its latest assessment, do not believe that there are credible alternative options for the critical enabling Technology programme that could be offered for consideration by the airlines or CAA;
- Limited programme delivery update against previously provided programme milestones since the milestones had only been provided in the Interim SIP not in SIP 2016;
- Commitments to maintain current service levels and quality;
- To the limited extent possible, analysis of implications for User Charges beyond RP2;
- Detailed comments on the changed business environment that has caused changes in plans;
- Detailed feedback and responses to airlines' arising from the Consultation and a commitment to improve Customer liaison in plan development going forward;
- Performance against service performance indicators;

However, and whilst recognising the considerable amount of detail provided in SIP17, there are a number of concerns with the SIP17 as it has been presented.

SIP17 Format. The use of a mixed approach slide package to provide the scope and detail of a £750m delivery programme is not easy to understand although it is recognised that this is an accepted approach that has been used for many years. If a slide deck is the preferred option for all stakeholders, then greater clarity and consistency in nomenclature and referencing is essential with much better signposting of important details. The mixing of programme areas, targets, milestones and projects with little clarity on relationships is potentially confusing and unhelpful.

SIP17 Detail. The SIP17 pack seems to be aimed at providing a high level view of NERL's plans yet frequently dives into detail, often out of context, that is again confusing and unhelpful. Moreover, there is insufficient detail in key areas such as what are the actual constituents of SIP17? SIP17 provides a specific list of milestones for the Airspace and Technology programmes, but it is less clear what commitment exists for elements of the programme not covered by these milestones. Reporting against SIP16 milestones¹⁷ is not against the Deployment Points but cites specific project deliveries that were detailed in SIP16 annexes and Interim SIP but not as part of an integrated delivery plan.

Programme Outcomes. Programme design best practice would expect programme work packages or projects to be linked to specific agreed outcomes to demonstrate a "causal link" between work and outcomes/benefits. However, SIP17 simply articulates targets in key areas such as safety; price; costs; environment and service delivery with no linkages between planned investment/projects and how the proposed targets will be delivered or enabled. The proposed milestones are not directly correlated with programme targets or planned outcomes so it is impossible to assess their accuracy or usefulness. The depth and quality of NERL's approach at project level is commendable and the internal governance and benefits management appears to be robust. However, at the top programme/portfolio level the cross project dependencies and links to the overall aim of the SIP is less clear. Without this "golden thread" to pull the work packages together as an integrated programme of work it is hard to assess what work is essential to meet the overall aim and what work is optional, or to make any value for money assessment.

Additionally, whilst NERL has made much of the change in the business environment between SIP16 and SIP17, forensic analysis on why the forecasts were so wrong and how NERL will prevent a recurrence to prevent SIP18 being another substantial, and unexpected, change would help build stakeholder confidence in the future.

Consultation. As noted above, NERL consulted with the major airline Customers between 25 Oct 16 and 14 Dec 16 and did amend the plans to reflect much of the Customer feedback. However, whilst NERL engaged with customers during 2016 through the Interim SIP and Airspace workshop, it did not provide any real indication of the scale of change for the Technology plan before the formal Consultation period. Given the considerable change between SIP16 and SIP17 (inc cost growth of c£150m; significant changes to the anticipated programme timetable and notification that the SIP16 cost base was only a rough order of magnitude cost based on a top-down view rather than a fully-costed programme) this consultation period was far too short. Effectively this

17. For instance page 38 shows milestone deliveries that were cited in SIP16 Annexes and the interim SIP only limited context is available which renders the update somewhat meaningless.

meant that the SIP17 plan was almost a *fait accompli* with only minor changes possible. In the future NERL should consider engaging in open consultation throughout the year to minimise the pressure during any formal consultation period and to ensure a “no surprises” approach. This would significantly help NERL in external stakeholder management. It was notable that there was very little consultation with other key stakeholders such as airports. Whilst airports are not direct Customers, and therefore have a very different relationship with NERL, they do represent a considerable part of the aviation sector and should be actively engaged through these major investment programmes to aid industry-wide alignment of aims and investments. The recent changes to Condition 10 of the NERL Licence adds a new obligation to consult airports on the NERL investment programme and NERL fully intends to meet this obligation going forward, although due to the nature of the changes to the plans on this occasion NERL felt that it was sensible to complete the airline consultation first. This change for future consultation will benefit airports, airlines, NERL and, most importantly, the fare-paying passengers who are the ultimate customers for all these services.

Reporting. The reporting element of SIP17 that has been provided is detailed in some areas, particularly in relation to Service Delivery, but less so in programme delivery with limited analysis or comment on why changes between SIP16 and SIP17 have occurred. Many of the changes are due to the increase in understanding as plans have moved from a high-level, indicative plan, to more detailed and developed delivery plans. On an investment programme of this scale, Customers and the CAA should expect more thorough, forensic analysis of the cost increase and the programme outcome slippages that Customers are paying for. The lack of such analysis gives Customers a real feeling that NERL is simply saying “trust us” but with little collateral evidence of why they can, and why they should expect better delivery performance in the future.

Conclusion

NERL has clearly committed considerable effort into generating SIP17. NERL also has recently introduced a rigorous internal P3O¹⁸ capability that will provide a real delivery enhancement. Research into the work behind SIP17 has shown that NERL is fully committed to deliver success and does appear to have Customer needs clearly at the centre of its endeavours. There is no doubt in the drive, determination and professional approach of NATS’ senior leadership and the P3O community within NERL. Indeed, the top-down and bottom-up review of the programmes and constituent parts, in tandem with the implementation of a central P3O, should give considerable confidence in future delivery.

Notwithstanding this drive and commitment SIP17, as it is currently presented, provides limited evidence of the linkage between work, outcomes and benefits. An over-arching strategy for a “causal chain” is essential for any major investment plan. SIP17 has the components for an effective SIP, but without this link between work packages, outcomes and benefits there can only be limited confidence that it will deliver all of the required outcomes and benefits within the agreed costs and timescales.

NATS/NERL has indicated that a prerequisite for implementation of SIP17 will be CAA approval of the form, scope and level of detail of the submitted plan. Any approval delay or rejection of the SIP17 would mean that the programme would be delayed pending approval, with concomitant increase in risks and costs and an inevitable delivery delay. With these factors in mind, and looking

18. Portfolio, Programmes, Projects Office.

forward rather than back, the following actions should be considered as a matter of urgency:

- NERL should provide future SIPs, interim SIPs and the Airspace and Technology programmes in a more recognisable and accessible programme structure with improved clarity and detail on:
 - SIP/Programme aims and confirmation of the constituent parts;
 - Intended outcomes and benefits;
 - Workstream/packages/key projects;
 - High-level dependencies;
 - Links between work/outcomes/benefits; and
 - Programme milestones that are linked to delivery of the agreed outcomes/benefits.
- The forthcoming Airspace and Technology Programmes should be developed as co-ordinated, linked programmes and in close conjunction with stakeholders including airports;
- NERL provides the interim SIP17, no later than 30 Jun 17, in the revised format that integrates SIP17, the Airspace and Technology Programmes, so that CAA can consider whether the interim SIP17 provides sufficient detail in the right form, scope and level of detail for enabling success and is acceptable within Condition 10 of the Licence.

This report has documented the findings of an independent review of the NERL SIP17. Whilst the CAA will consider these issues and whether the SIP17 in its current form is acceptable and noting that there are several areas that require urgent attention, the focus should be on looking forward not back. The findings and conclusions of this report are aimed at improving the collective understanding of, and commitment to, an investment programme that will deliver the required and agreed benefits within the agreed cost and time without hindering or slowing progress.