# NATS (En Route) plc SIP 20
## Independent Reviewer Report

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12 March 2020

**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 ongoing observations and research by the CAA Independent Reviewer Grant Bremer.

This report summarises the author's findings and opinions and represents a snapshot of the situation as of 12 February 2020 which was prior to COVID-19 pandemic.

**Background**

Condition 10(3) of the NATS (En Route) plc [NERL] Air Traffic Services Licence dated 28 November 2019 requires NERL to prepare a Service and Investment Plan (SIP) that refers to the most recent business plan and the related airspace and technology programmes each year. Condition 10 (3a) then requires NERL to provide a SIP that, by reference to the most recent business plan and technology and airspace plans, updates NERL's investment plans, delivery against programme milestones and any material change in NERL's expectations regarding the level and quality of the provided services.

In accordance with Condition 10 NERL submitted its SIP20 update to CAA for approval in December 2019[1].

In SIP20 NERL states that "*Our service and investment plan (SIP) summarises the steps we are taking to deliver the day to day service and enhance it for the future".*[2] NERL also states that the *"aim of our investment plan is to deliver benefits with minimal disruption to our customers that improve safety, capacity and resilience"*[3].

Part 1 of SIP20 provides a service and benefits update by detailing the key benefits and how they have been managed and delivered, focusing on safety, service and environment.

Part 2 of the SIP20 provides an update on the investment programme, including both technical and airspace updates, with the people programme. It also describes how NERL is driving a "benefits led portfolio".

Part 3 is a retrospective commentary on RP2 and outlines the key challenges and risks associated with RP2, before summarising the cost of delivering the investment programme.

Part 4 summarises Oceanic delivery through RP2 and outlines NERL's intentions for the Oceanic region in RP3.

Part 5 returns to the main SIP and indicates how NERL foresee RP3 subject to determination of the ongoing CMA referral.

NERL has helpfully provided background information in the 5 Appendices.

This report will focus on the RP2 reporting rather than the RP3 planning that is still not agreed and published, although commentary on the RP3 sections will also be made where appropriate.

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1. NERL 2020 Service and Investment Plan (SIP20) published 20 December 2019.
2. NERL SIP20, page 5, para 1.
3. NERL SIP20, page 17, para 3.

## Part 1: Service & Benefits Update

The SIP20 Service & Benefits Update starts by describing the growth in air traffic levels through RP2. NERL states that overall traffic has seen growth c40% higher than expected with particular pressure being seen on a small number of sectors.

The performance section notes *"significantly higher than forecast traffic using Gatwick (10% growth), Stansted (31% growth) and Luton (36% growth) airports"*[4]. NERL also *"predicts growth in 2019 of 0.9%"*[5] and that further forecasts of growth, including Oceanic, will be *"updated in December 2019"*[6]. NERL then comments that *"any slowing of growth in RP3 will be mainly a result of airport capacity constraints within the UK. However, there will still be a requirement for additional capacity to be provided in sectors which are predicted to become bottlenecks to ensure that future demand can be serviced"* [7]. These traffic comments are essentially unchanged from iSIP19.

### Safety Performance & Benefits

Against this backdrop NERL comments on its safety performance by stating that *"we continue to deliver a safe, high-quality service with no NATS attributable risk bearing Airprox A or B events during RP2"* [8] and that NERL has *"delivered a safe and efficient service, whilst continuing to manage record traffic levels and deploying new technology into operation"*[9]. However, NERL also recognises that it has failed to meet its internal, agreed safety target of a reduction of 13% in Risk Analysis Tool (RAT) points/100k flights and that current performance foresees a 26% increase in RAT points/100k flights.

| Target | Current Performance | RP2 Forecast | Enabled by expected benefit (forecast % reduction in RAT points per 100k flights) | | | |
|---|---|---|---|---|---|---|
| Target 13% reduction in RAT points per 100k flights | 26% increase in RAT points per 100k flights at Nov 19 | Forecasted range 28 - 36% increase (central estimate 32%) in RAT points per 100k Flights at Dec 19 | Capital Investment | 5% | Airspace: SAIP AD4 PLAS D3 SAIP AD5 | 2% |
| | | | | | Technology: ExCDS (Jun 18) | 3% |
| | | | Operational Changes | 5% | Operational Changes | 5% |
| | | | Prediction without benefits | 45% increase (range 41−50%) | | |

### Service & Capacity Improvement

NERL has provided details of its performance against the EU & CAA Service targets with commentary on the delivery of these targets through RP2. The final achievement[10] is given as:

| RP2 Service Quality Term | End Nov 2019 (A) | 2019 Target | End 2019 Forecast |
|---|---|---|---|
| C1 Service: Delay per flight at FAB level | 13.7 | 15.6 | 12.8 |
| C2 Service: Average Delay per flight | 8.9 | 10.8 | 8.6 - 10.2 |
| C3 Service: Impact Score | 22.0 | 23.8 | 21.3 |
| C4 Service: Variability Score | 148.1 | 2000 | N/A |
| Key | Exceeds target & outside dead-band | Achieving target or within dead-band | |

4. NERL SIP20, page 8, para 2.
5. NERL SIP 20, page 8, para 3.
6. NERL SIP20, page 8, para 3.
7. NERL SIP20, page 8, para 3.
8. NERL SIP20, page 9, para 1.
9. NERL SIP20, page 9.
10. NERL SIP20, page 11, Table 2.

With regard to Service Capacity, NERL states that there has been capacity gain through RP2 as a result of technical deployments that are summarised[11] as being:

| Unit | Percentage Change |
|---|---|
| Swanwick AC | 14% |
| Prestwick | 6% |
| Swanwick TC | 5% |
| NERL | 9% |

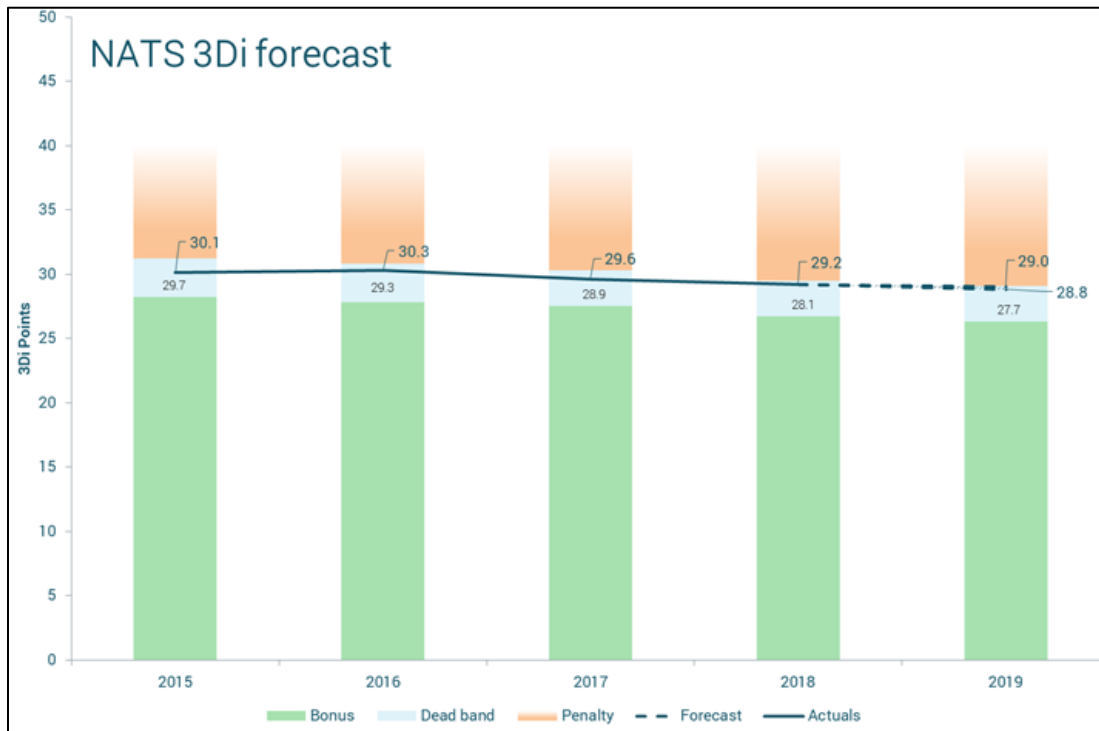In terms of reporting Service Benefits in RP2, NERL has given a tabular summary[12] as being:

| Investment Area | Benefit Description (C10 31 March 2017) | Benefit Forecast (C10 31 March 2017) |
|---|---|---|
| Airspace | Capacity improvements realised through the following: LAMP – to provide a clear and predictable flow of traffic inbound to London City / systemisation robust at busiest times SAIP – to deliver a 1% to 5% increase in Swanwick Airspace capacity by the end of RP2 and improve situational awareness in TC PLAS – to deliver a 5% - 10% increase in capacity in Prestwick Lower Airspace sectors | c.5-7% |
| Technology: DSESAR | Capacity improvements assessed across deployments but expected to be more significant in RP3 once the tooling is deployed to enable and exploit airspace change. In RP2: iTEC in Prestwick upper airspace and ExCDS have been the key deployments from the DSESAR programme to date. The ExCDS PIR confirms our decision to base our future services on an unified and scalable platform. | ExCDS PIR has confirmed that there was an increase in monitor values of 1.7% average across TC. This is a significant contribution to the overall 5% gain. |
| Technology: Current systems | Capacity improvements assessed against Oceanic and current system improvements: Oceanic: Introduction of Performance Based Communication & Surveillance (PBCS) in 2018 has seen a step change in traffic receiving requested clearances in an environment of increased traffic: Apr-May 2017 % Requested clear 59% % Entry point 89% % Height 66% Current: Improved strategic planning & traffic forecasting Dynamic flight planning assessment Options for SID and STAR offloads to improve weather resilience | Capacity gains and improvement in performance Sep 2019 67% 93% 71% These are generating Incremental capacity increases across the NAT. |

Environmental performance & benefits

NERL has reported Environmental performance against the 3Di metric as it has done for some years. The latest report suggests that NERL will achieve a 3Di score of 28.8-29.0, which is higher than the target of 27.7 but just below the penalty point boundary, as shown below:

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11. NERL SIP20, page 12, Table 2.
12. NERL SIP20, page 12, Table 1.

**NATS 3Di forecast**

Legend: Bonus (green) — Dead band (light blue) — Penalty (orange) — Forecast (dashed) — Actuals (solid line)

| Year | Actuals/Forecast line | Lower value |
|------|-----------------------|-------------|
| 2015 | 30.1 | 29.7 |
| 2016 | 30.3 | 29.3 |
| 2017 | 29.6 | 28.9 |
| 2018 | 29.2 | 28.1 |
| 2019 | 29.0 | 27.7 / 28.8 |

In terms of benefits, NERL has revised its final forecast to be annual savings of 206kT against the C10 revised target of 204kT in 2017. Notably, NERL has commented that in iSIP18 the forecast had been 249kT but that this has not be realised primarily due to some airspace changes being moved into RP3, and which is out of NERL's control, but that there have been some offsetting gains due to ExCDS and eTBS deployments in 2018 plus the benefits enabled by LAMP(P1), PLAS and SAIP projects[13]. NERL also recognised that the original RP2 target was 432kT, although this was revised in 2017 to reflect the agreed revision, as consulted with airlines, to the Airspace Programme.

| KPA/Target | Enabled by | Current Forecast | Actual to Date (Sept 19) | Investment Areas (207kT) | | Current Forecast | Actual to Date |
|------------|-----------|------------------|--------------------------|--------------------------|--|------------------|----------------|
| Target: 432kT in RP2 Maximum achievable from C10: 204kT | Capital Investment | 206kT (iSIP19 = 209kT) | 202kT (iSIP19 = 191kT) | Airspace | 77kT | 32kT (iSIP19 = 32kT) | 32kT (iSIP19 = 29kT) |
| | | | | Technology | 130kT | 174kT (iSIP19 = 177kT) | 170kT (iSIP19 = 162kT) |

NERL has also provided a retrospective assessment of the benefits due to the ExCDS project. ExCDS introduced electronic flight strips into London Terminal Control to replace paper flight strips for approach and terminal operations. The ExCDS project was *"an essential stepping stone towards the strategic solution we [NERL] plan to deploy in RP3"*[14] with the major benefits being internal:

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13. LAMP(P1): London Airspace Management Programme (Phase 1); PLAS: Prestwick Lower Airspace Systemisation; SAIP: Swanwick Airspace Improvement Programme.
14. NERL SIP20, page 15, para 2.

| Benefit type (planned) | Target value | Target date | Actual Value | Actual rdate | Evidence supplied |
|---|---|---|---|---|---|
| Cost Efficiency (Internal OPEX) | Reduction in headcount of 25 FTEs ATSAs | 31 Oct 18 | Reduction of 25 FTE ATSAs | 31 Oct 18 | October rosters reflect reduction |
| Strategic enabler | Enables the successful delivery of the Deploying SESAR programme technology transition sequence | 30 Jun 18 | Complete | 30 Jun 18 | All sectors within Swanwick terminal control have now transitioned onto fully electronic operating tools (ExCDS) |
| Cost Efficiency (External OPEX) | Annual external OPEX costs of the assets delivered by L5170 shall not exceed £351k | 01 Mar 18 | £203k | 30 Apr 19 | Confirmation received from Service Value Manager that costs are included in BP budget and are now being paid |
| Safety | A reduction for ATM Ground RAT Points: Unit Level (i.e.TC): at least 1.8% reduction En-Route Operations: at least 1.2% | 31 Dec 19 | 2.5% | Jul 2019 | Analytics ExCDS Post Implementation Report |
| INEA | Jointly generate a one off income for the business of up to €2m | 30 Jun 20 | - | - | Received €1.6m so far and expect that the final claim will bring the amount we receive to €2m |

However, NERL has analysed the project and its impact on its services and concluded that there were several new, or opportunity, benefits enabled by ExCDS:

| Benefit type (NEW) | Target value | Target date | Actual Value | Actual date | Evidence supplied |
|---|---|---|---|---|---|
| Environment (fuel) | Nil | Nil | 2675T | Sep 2019 | Analytics ExCDS Post Implementation Report |
| Environment 3Di | Nil | Nil | 0.18 points | Sep 2019 | Analytics ExCDS Post Implementation Report |
| Service (capacity) | Nil | Nil | 0.5 (1.7%) Average TC MV increase | Sep 2019 | Analytics ExCDS Post Implementation Report |
| Service (C2) | Nil | Nil | 0.2s | Sep 2019 | November Service Benefit Delivery Panel |

**Part 2: RP2 Investment Programme Update**

The SIP20 Investment Programme section starts with a retrospective commentary on how the requirements and ambition of NERL's SIP has adapted to a changes in technology. There is also a reminder of the RP2 Consultation that was conducted through 2016-2017 leading to a plan and budget revision.

Current operational system delivery is summarised[15] as:



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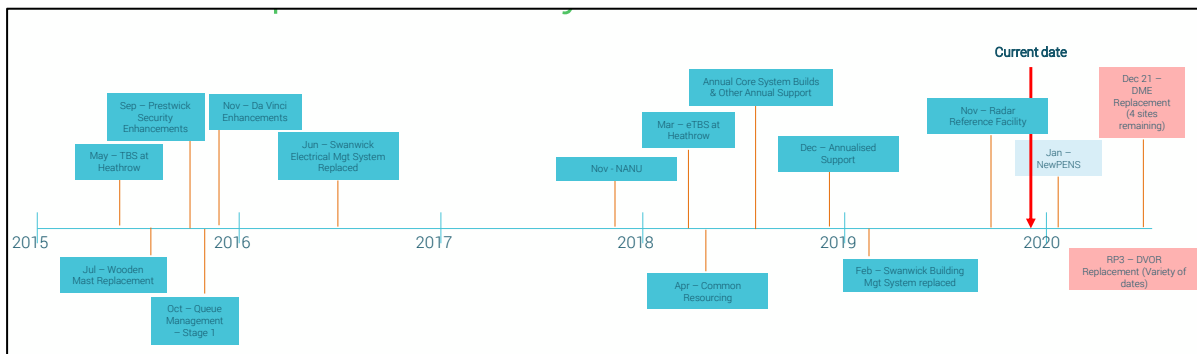
15. NERL SIP20, page 19.

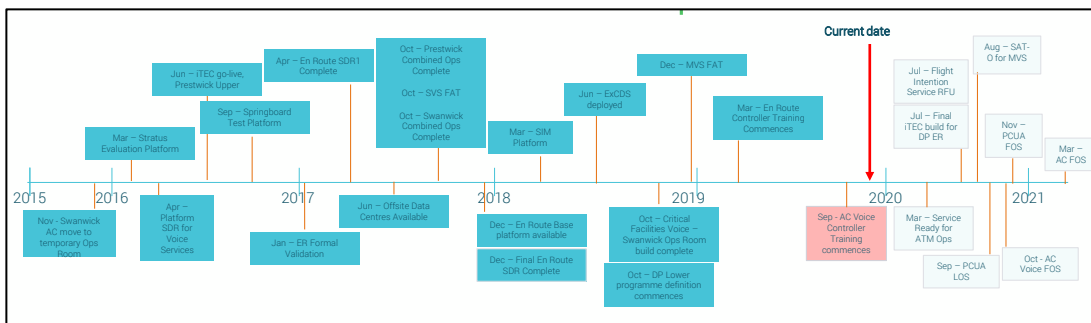Further detail at Appendix A provides specifics on milestones dates and status.[16]:

| # | Milestone | Date | Status |
|---|-----------|------|--------|
| | **Non 'legacy escape' milestones** | | |
| 49. | Common Resourcing | Apr-18 | Com. |
| 50. | DME Replacement (4 sites remaining) | Apr-19 | Dec-21 |
| 51. | Radar Reference Facility | Sep-19 | Nov 19 |
| 52. | Time-based Separation (TBS) at Heathrow | May-15 | Com. |
| 53. | Enhanced TBS at Heathrow | Mar-18 | Com. |
| 54. | Wooden Mast replacement | Jul-15 | Com. |
| 55. | Queue Management - Stage 1 | Oct-15 | Com. |
| 56. | Arrival Management - Enhancements | Nov-20 | Jun-21 |
| 57. | Da Vinci enhancements | Nov-15 | Com. |
| 58. | Annualised support | Dec-19 | On trk. |
| | **Legacy Systems** | | |
| 59. | DVOR replacement complete (variety of dates into RP3) | Dec-18 | RP3 |
| 60. | Annual core systems builds | Dec-19 | On trk. |
| 61. | Other annual support | Dec 19 | On trk. |

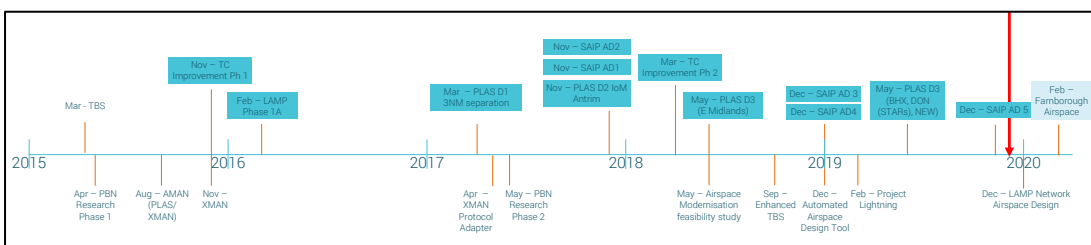| # | Milestone | Date | Status |
|---|-----------|------|--------|
| | **FACILITIES MANAGEMENT** | | |
| 62 | Prestwick Security enhancements | Sep-15 | Com. |
| 63 | Swanwick Electrical Management System replaced | Jun-16 | Com. |
| 64 | Swanwick Building Management System replaced | Feb-19 | Com. |
| | **OCEANIC MILESTONES** | | |
| 65. | Oceanic Improvements | Mar-18 | Com. |
| 66. | Reduced Lateral separation minima (RLAT) | Mar-16 | Com. |
| 67. | Gander Automated Air Traffic System plus (GAATS+) Build | Mar-19 | Com. |
| 68. | North Atlantic Network Upgrade (NANU) | Nov-18 | Com. |
| | **CO2 AND FUEL SAVING** | | |
| 69. | Annual Investment | Dec-19 | On trk. |
| | **MILITARY** | | |
| 70. | Military spending | Dec 19 | On trk. |

**Key**

| | | | |
|---|---|---|---|
| Complete | On track | Delayed – on track to latest plan | Delayed – not on track to latest plan |

The second section of reporting focuses on the DP En Route plan[17] and states that 19 major milestones have been delivered with a further 9 due. The report does note that a safety related problem was identified during testing of part of the iTEC system at Prestwick that could not be left unaddressed, leading to a 14-week delay.



DP En Route plan timeline (2015–2021). Milestones include: Nov – Swanwick AC move to temporary Ops Room; Mar – Stratus Evaluation Platform; Apr – Platform SDR for Voice Services; Jun – iTEC go-live, Prestwick Upper; Sep – Springboard Test Platform; Jan – ER Formal Validation; Apr – En Route SDR1 Complete; Jun – Offsite Data Centres Available; Oct – Prestwick Combined Ops Complete; Oct – SVS FAT; Oct – Swanwick Combined Ops Complete; Mar – SIM Platform; Dec – En Route Base platform available; Dec – Final En Route SDR Complete; Jun – ExCDS deployed; Dec – MVS FAT; Oct – Critical Facilities Voice – Swanwick Ops Room build complete; Oct – DP Lower programme definition commences; Mar – En Route Controller Training Commences; Current date; Sep – AC Voice Controller Training commences; Jul – Flight Intention Service RFU; Jul – Final iTEC build for DP ER; Mar – Service Ready for ATM Ops; Sep – PCUA LOS; Aug – SAT-O for MVS; Nov – PCUA FOS; Oct – AC Voice FOS; Mar – AC FOS.

Subsequent reporting describes the progress of the Airspace investment plan and summarises delivery as being:



Airspace investment plan timeline (2015–2020). Milestones include: Mar - TBS; Apr – PBN Research Phase 1; Aug – AMAN (PLAS/XMAN); Nov – XMAN; Nov – TC Improvement Ph 1; Feb – LAMP Phase 1A; Apr – XMAN Protocol Adapter; May – PBN Research Phase 2; Mar – PLAS D1 3NM separation; Nov – PLAS D2 IoM Antrim; Nov – SAIP AD1; Nov – SAIP AD2; May – Airspace Modernisation feasibility study; May – PLAS D3 (E Midlands); Mar – TC Improvement Ph 2; Sep – Enhanced TBS; Dec – Automated Airspace Design Tool; Dec – SAIP AD 3; Dec – SAIP AD4; Feb – Project Lightning; May – PLAS D3 (BHX, DON (STARs), NEW); Dec – SAIP AD 5; Dec – LAMP Network Airspace Design; Feb – Farnborough Airspace.

The final reporting is on the People programme and describes a range of initiatives and projects that will complete at the end of RP4 but does not provide full programme details.

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16. NERL SIP20, page 47.
17. NERL SIP20, page 20.

Part 2 concludes with final comments on a "benefits led portfolio" and confirms the governance process through 6 benefits panels supported by the P3O Office. The report provides an example of how benefits were considered during a change process, SAIP AD6, with comments on how analysis and governance were both key in the final changes.

**Part 3: RP2 Investment Programme, Main Challenge, Cost Summary and Risk Management**

The initial comments in Part 3 focus on the spend profile, and how it has been managed through RP2, and the customer consultations that have occurred.

Then Part 3 moves on to note that the main challenge in RP2 for NERL's SIP was fully understanding the complexity of the core infrastructure and the required detail of the scale of the full solution[18]. Moving from a traditional infrastructure to a virtualised environment encompasses a level of complexity that has taken NERL longer to achieve than originally antiicpated, particularly some areas associated with development and safety assurance.

NERL has responded to the changing nature of the cyber-attack threat[19] by developing a Security Operating Centre in order to introduce a "threat-based" approach and improve the level of boundary protection. NERL has adopted a "secure by design" approach, building on the new virtualised environment, to embed multi-layered, appropriate and proportionate security controls to protect operational services and information assets.

NERL has summarised the cost outturn for RP2 as being[20]:

| Programme | March 2017 C10 Baseline RP2 £m | Net movement (to) / from RP3 £m | Savings £m | Cost Increase £m | Additional Scope £m | SIP 20 Fcast RP2 £m |
|---|---|---|---|---|---|---|
| LAMP Phase 1a | 6 | | | | 0 | 6 |
| Prestwick Lower Airspace Systemisation | 6 | (2) | | | 1 | 5 |
| Free Route Airspace | 13 | (6) | | | (4) | 3 |
| Airspace Changes | 21 | (3) | (2) | | 1 | 17 |
| AIRAC | 11 | | (2) | | | 9 |
| Airspace | 57 | (11) | (4) | | (2) | 40 |
| Platform & Deployment | 100 | (4) | | 6 | 13 | 116 |
| Trajectory Services | 214 | (5) | (7) | 2 | 2 | 206 |
| Comms, Info & Surv Services | 60 | (6) | (4) | 3 | 6 | 59 |
| Critical Facilities | 35 | (2) | | 1 | 3 | 38 |
| Foundation Services | 72 | | | 18 | 32 | 122 |
| DSESAR | 481 | (17) | (11) | 30 | 57 | 541 |
| Non-Legacy Escape (LE) Facilities/Services | 83 | | (1) | | 2 | 84 |
| Legacy Systems | 74 | | (15) | | 2 | 61 |
| Facilities Management | 21 | 1 | | | | 22 |
| CO2 and Fuel Saving | 5 | | | | (4) | 1 |
| Oceanic | 18 | | | | | 18 |
| Current Systems | 201 | 1 | (16) | | | 186 |
| Total NERL | 739 | (27) | (31) | 30 | 56 | 767 |
| Military | 11 | | | | 1 | 12 |
| Total | 750 | (27) | (31) | 30 | 57 | 779 |
| Contingency | 30 | | | | (30) | |
| Total | 780 | (27) | (31) | 30 | 26 | 779 |

18. NERL SIP20, page 26, para 3.
19. NERL SIP20, page 27.
20. NERL SIP20, page 28.

NERL has explained[21] that some elements of the significant cost changes are:

- Prestwick Lower Airspace Systemisation saw a transfer of £2m to RP3 due to a delay to Manchester TMA changes although there was a £1m growth due to ScTMA deployment;
- Free Route Airspace saw a transfer of £6m to RP3 due to DP En Route, and a further £4m was transferred to DSESAR;
- Airspace changes including SAIP AD6 and IPA caused £4m scope transfer to RP3, with £2m savings but then offset by £1m of new scope;
- AIRAC has generated £2m cost efficiencies;
- DSESAR's main cost challenge was within Foundation Services of £50m with an additional £5m cost increase for the Security Operations Centre and its integration;
- Platform work saw £4m scope transferred to RP3 but also produced £18m cost increase of which £13m was due to additional scope (design, implementation, consultancy and programme extension);
- Trajectory services did not have any major scope increases and £7m savings were delivered by early closure of an iTEC project that was no longer required, as well as £5m scope transfer to RP3 for some elements of ExCDS which can only be deployed after DP En Route;
- Comms info scope changes produced an extra £4m cost;
- Critical facilities scope growth saw £2m cost increase and a transfer of scope to RP3 caused a reduction of £2m;
- Current systems and Facilities Management collectively drove £16m of savings.

Whilst NERL has highlighted a range of cost changes, the noted details do not correlate fully and directly with the table of changes above due to rounding up or down of values.

NERL briefly describes how risk has been balanced across its portfolio and how it has balanced cost, scope and delivery after starting with a $P_{50}$ cost envelope. Notably, NERL notes that in March 2017 the forecast of outturn was £741m with a risk margin of a further £361m (total of £1,102m) and by November 2019 the final forecast of outturn was £779m with no further risks.

### Part 4: RP2 Oceanic service & investment update and RP3 intent
NERL's reporting for Oceanic investment is beyond the scope of C10 so will not be covered in this report.

### Part 5: RP3 Investment plan intent
NERL has noted the impact of the CAA's decision to refer NATS' rejection of the RP3 price determination to the Competition and Markets Authority (CMA) in November 2019. NERL states that it had intended to set out the baseline plan for RP3 as part of SIP20 but that the divergence from the Business Plan and the uncertainty regarding the referral to the CMA has precluded that intention, although there is an expectation that an interim RP3 plan will be shared for consultation in Q1/RP3. However, notwithstanding new plans and CMA's price determination, NERL does confirm that it will continue to focus on sustainment of the current infrastructure, delivery of DP En Route and continue preparations for lower airspace changes.

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21. NERL SIP20, page 28, para 3 – page 29, para 11.

**Appendices**

Appendix A [C10 Plan Milestones update]: Airspace Milestones have been covered above. Technology Milestones (Deploying SESAR) reports 19 complete with 9 to follow which correlates with the DP En Route comments above. The current systems section correlates with comments above.

Appendix B [Change management update]: This Appendix comments on key changes that have occurred within the portfolio that NERL believes are worthy of specific discussion.  On this occasion the appendix reviews how an issue relating to the proposed approach to implementing Bandboxing and Splitting was identified and addressed.  This involved a detailed review of several options, which were consulted with customers, before identifying the preferred approach to address the issue.

Appendix C [SIP Consultation process]: In Appendix C NERL has outlined how it plans to consult with customers on the evolving SIP through RP3. It follows previously disseminated approaches discussed and supported by customers in previous SIPs.  In its NPP the CAA has proposed "additional governance and control in RP3 in relation to the investment programme" but NERL has stated that it "do[es] not believe that it would be appropriate to apply this additional policy at this stage".   Appendix C also outlines a Quarterly Dashboard for updating customers on SIP delivery that covers the key areas that customers would be interested in, although benefits delivery is only referenced at a programme level not a portfolio level.

Appendix D [NERL overview, Regulatory and Resilience Benefits and C11 Service Standards Statement]: Appendix D starts with a review of NERL as an organisation, before describing its compliance with a wide range of regulations and rules. NERL also describes its resilience posture, which is essentially the same as the previous iSIP19 reporting, before concluding the Appendix with comments on NERL's Condition 11 obligations which are outside the purview of this report.

Appendix E [UK Airspace Modernisation Strategy delivery report]: NERL reports that limited engagement between NERL and the CAA, due to CAA's focus on the management of the Thomas Cook failure, has meant that there is no significant update. Progress is almost unchanged since the previous report in iSIP19 with only one milestone (6. Queue Management) moving from Green to Amber.

**Analysis**

Part 1: Service & Benefits Update
The NERL Licence Condition 10 (11c) requires NERL to update *"material changes in the Licensee's expectations as to the level and quality of the services it will provide, the means by which the services will be provided, and the likely implications for charges to Users beyond the expiry of the period for which charges are for the time being set pursuant to the Charge Control Conditions"*. NERL reports that Service Performance targets (C1-4) are forecast to be achieved. Given the considerable changes through RP2, both in terms of traffic and SIP delivery, this is notable result.

NERL has reaffirmed that it uses six Benefit Delivery Panels (BDP) each chaired by a senior member of NERL management. The six BDPs are: Safety, Capacity, Environment, Cost Efficiency, Legislative Compliance and Sustainment. Part 1 of SIP20 only reports on Safety, Capacity and Environment. With regard to these three benefits, NERL reports:

- Safety: 26% increase in RAT points against a target of 13% reduction in RAT points;
- Capacity: Meeting the C1-4 Service targets demonstrates that NERL has achieved the anticipated Capacity benefits;
- Environment: NERL reports that it just achieved its 3Di target, and that it will enable 206kT of fuel savings against the revised target of 204kT set in 2017 (a decrease from the original RP2 target of 432kT.

Whilst Legislative Compliance is noted as being achieved in Appendix D (page 58) there does not appear to be any reference to Cost Efficiency or Sustainment benefits in SIP20 although this is consistent with the recommendation made by the Trax review of SIP reporting which was to focus on safety, service and environment.

Part 2: RP2 Investment Programme Update

Part 2 reporting is a relatively simple overview of the milestones achieved through RP2 in the Current Operational Systems, DP En Route and Airspace programmes with less commentary on the supporting People programme that had been seen in previous SIPs. Whilst this SIP structure follows the Trax review recommendations, the reporting of progress has been presented in a different way to previous iSIP/iSIPs as it has attempted to report across the entirety of RP2 rather than focus primarily on recent progress and changes. Previous reporting has noted that the overall programme consists of: Airspace, Technology (Current or Legacy Systems) and Technology (Future Systems or DSESAR). Within these major programme areas reporting has then outlined delivery progress against constituent workstreams or project areas. However, SIP20 has simply reported on delivery of high-level milestones in Current Operational Systems, DP En Route and Airspace. It is recognised that it is the same programmes and milestones that are being reported, but the change in terminology does not help the reader cross refer to previous reports. Further NERL's reporting is against the latest agreed baseline and does not indicate prior changes against the original plan. Although NERL has explained these previous changes, it would be useful to still be able to understand these in more detail.

- Current Operational Systems: The timeline with key milestones, supported by brief explanatory notes, for delivery of Current Operational System elements of the SIP is supplemented by further details of milestone dates and status in Appendix A. However, the notes in this SIP do not highlight why the DME delivery milestones have slipped, or whether the delivered milestones were delivered on time or late when set against the original baseline plan. However, NERL has made efforts through RP2 to explain delays, the re-baselining of milestones and the appendix reports on achievement against them;
- DP En Route: The DP En Route timeline, supported by explanatory notes, shows a series of deployed milestones throughout RP2. However, as with the Current Operational Systems reporting, this section does not outline if milestones were delivered on time (against the 2017 baseline), although it does provide comments on the issues concerned with bandboxing for Prestwick;
- Airspace: The Airspace milestone delivery timeline shows some of the key milestones that have been delivered and does provide commentary on delivery, although once again there is no indication of whether milestones have been delivered to plan or not (against the 2017 baseline).

The reporting of milestone delivery in SIP20 does not provide any clarity on whether milestones were delivered to the original plan, or why they were not in many cases. Whilst this level of reporting is broadly consistent with iSIP19 as recommended by the Trax review, it does not

highlight progress in the wider DSESAR programme.  Additionally, while NERL has previously provided lessons learned based on issues that have arisen, this SIP does not offer any insight into what NERL will do in the future to hold delivery to the RP3 Investment Plan when it is agreed. After several evolutions of reporting, NERL has opted for broader reporting towards the end of RP2 as it attempted to cover the entirety of RP2. It would be helpful to see more detail in how it intends to hold to delivery in future SIP reporting.

The 2017 Airspace & Technology plans were summarised as being:
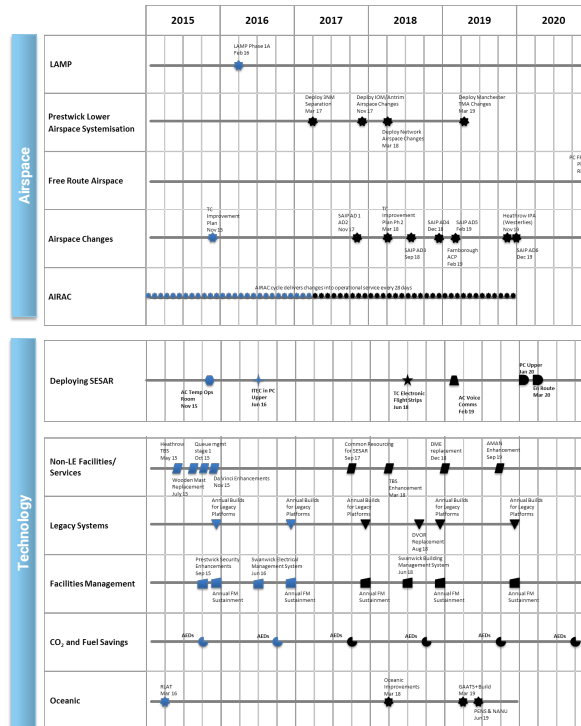


Recent SIP and iSIP reporting had built on this programmatic reporting approach. The recent refresh of the SIP reporting by NERL, supported by Trax, has moved towards a more focused reporting of milestone delivery in the main body with further detail in the appendix. If this approach is to be helpful to customers more detail of the milestones, including planned versus delivered dates, and the programme dependencies should be included.

It would have been helpful if Part 2 had been more explicit on the context of DP En Route within the DSESAR programme, although those with sufficient prior knowledge will understand that it is the core of the DSESAR reporting. The use of inconsistent nomenclature is unhelpful and should be avoided.

 The last IR Report on iSIP19 stated:

> *"In the update on SIP delivery, NERL has provided limited explanation for the delays in some key milestones and the impact of these delays. However, there is little evidence of how NERL will ensure that repeat delays will not occur. This is a frequent theme of SIP/iSIP reporting and should be addressed in future reporting. Explaining why delays have occurred is only part of the story: for delivery confidence in the future it is imperative that NERL learns the lessons and implement the required changes to prevent repetition.*

*As with previous SIP/iSPs there is a mixture of nomenclature including milestones, programmes, reporting metrics etc that are unhelpful…………This inconsistency in terminology detracts from the overall impact of the report and does cause unnecessary confusion."*

These comments also apply to SIP20.

The final section of Part 2 covers NERL's "benefits led portfolio" approach. However, whilst NERL's governance of benefits through the BDPs provides senior management engagement, the "benefits led" approach does not appear to be fully evidenced in the report. The example shows what the level of benefits to be delivered by the SAIP AD6 changes selected but may have been improved by providing evidence of the range of possible changes considered and the associated benefits with each. This suggests that NERL has more to do to evidence its "benefits led" approach at a portfolio level. This approach is supported by the additional benefits delivered by the ExCDS project. Whilst these extra benefits are a welcome opportunity, a fully effective "benefits led" approach may have anticipated that they would be delivered or enabled. This approach has been commented on in several previous IR Reports.

Part 3: RP2 Investment Programme, Main Challenge, Cost Summary and Risk Management
The initial section of Part 3 focuses on the main challenges faced by NERL through RP2: core infrastructure design and cyber security. It is clear that NERL may have underestimated the level of complexity associated with its core infrastructure design which has led to a series of unfortunate delays and cost growth. The use of industry standard technology is to be applauded but NERL should provide greater clarity on its ability to meet its delivery schedule. The evolution of the cyber threat has driven changes into a "secure by design" ethos. These initiatives are to be welcomed, but NERL should ensure that future designs are readily adaptable to changing demands, requirements and, in many cases unpredictable and unknown, emergent threats in order to minimise delivery changes to a funded, agreed programme.

The cost summary headlines[22] indicates that NERL delivered the RP2 SIP at a total cost of £779m against and agreed baseline cost of £780m. However, whilst this reflects well on NERL it is only part of the story. In real terms £83m cost was either transferred to RP3, cost increases or scope increases. This represents >10% increase and consumed all of the £30m contingency allowance for the SIP, although this increase was offset by £31m of savings representing a net increase of <7%. As previously highlighted, and agreed as part of the capital governance regime, the £780m envelope did not include an allowance for risk.

Risk management reporting in SIP20 focused on how NERL started with an undeclared risk envelope of £361m over the initial (Mar 17) £741m $P_{50}$ cost and actively managed that risk down through the use of scope changes, savings and use of contingency to a final delivery cost of £779m. There is no mention of any residual risk to RP2 delivery.

Appendix C: SIP Consultation process
NERL's consultation with customers and stakeholders has been relatively consistent through RP2. The plans for RP3 are still not agreed but it will be essential that all parties agree how RP3 consultation is delivered. Particularly important will be the consultation and governance concerning any changes to the SIP. Early in RP2 changes were often presented to customers as a *"fait accompli"* rather than a truly consultative process and this should be avoided in future.

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22. NERL SIP20, pages 28-29.

The proposed Quarterly Dashboard will provide a very helpful addition to the consultation process and reporting. However, the Dashboard should include benefits tracking at the portfolio level as well as programme level to support delivery and potential changes to the SIP.

**Conclusion**
SIP20 effectively brings RP2 SIP reporting to a close. NERL has accounted for its delivery of the £779m SIP and has clearly made considerable progress in many areas. However, and as previously noted in IR Reports, there are a range of underlying themes and issues that should be noted:

- Inconsistent nomenclature and terminology;
- Dependency management at the programme level could be improved;
- The SIP20 Report does not provide sufficient evidence of a benefits led approach to benefits management rather than a benefits aware approach actioned on an opportunity basis. If NERL is serious about the programme enabling and driving benefits, then the evidence of this needs to be much more clearly presented within the SIP in order to demonstrate real accountability for benefits delivery.

Additionally, the reduced detail on the milestones, workstream dependencies in Part 2 and the move of some data to the appendix undermines the effectiveness of the reporting. Whilst this is possibly an "end of RP2" approach, it should not become the norm. Customers will require greater visibility of how NERL will manage dependencies, prevent or ameliorate the impact of delays and how it will manage its supply chain to deliver to an agreed plan.

RP3 planning, when it is shared in detail, must identify workstreams, milestones and dependencies from the start. NERL must then be consistent in terminology and milestone references in its delivery reporting. It must also remain consistent and transparent in the cost base and cost changes.

NERL has explained that its portfolio is benefits led, with processes that start from the question of "what benefits need to be delivered?" and that it uses benefits panels to re-direct projects and programmes where necessary to optimise benefits. However, this approach is not fully evidenced in the SIP documentation and NERL must do more to show that their portfolio is truly benefits led rather than merely benefits aware.

NERL has reported on its £779m SIP and, for the most part, delivered considerable change in a complex environment. RP3 is likely to see further changes in the environment and NERL should ensure that the initial/baseline delivery plan and costs are well articulated, understood and agreed. NERL should then use consistent nomenclature and reporting as RP3 progresses to ensure that all involved can monitor progress and support, or challenge, as necessary. Improved consultation and governance of the SIP, coupled with effective Quarterly Dashboard updates, will aid that process.