LE GOUVERNEMENT
DU GRAND-DUCHÉ DE LUXEMBOURG
Ministère du Développement durable
et des Infrastructures

Administration de la navigation aérienne

ANA ANNUAL REPORT 2015 - 2016

Edition: 1.0

August 2016

Page left blank

The following table identifies all management authorities who have successively approved the present issue of this document.

DOCUMENT APPROVAL			
AUTHORITY	**NAME**	**DATE**	**SIGNATURE**
ANA	John SANTURBANO Director ANA	13.09.2016	

DOCUMENT CHANGE CONTROL			
Edition Number	**Edition Date**	**Reason for Change**	**Pages affected**
Edition 0.1	April 2016	Working Draft	All
Edition 0.2	Mai 2016	Draft	All
Edition 0.3	July 2016	Draft	All
Edition 1.0	September 2016	Released Version	All

DOCUMENT STATUS AND TYPE		
STATUS	**CATEGORY**	**INTENTED FOR**
Final Version	Annual Report	Public

Page left blank

TABLE OF CONTENTS

Page left blank

FOREWORD

This report looks back to the achievements since July 2015 until June 2016.

During the reporting period ANA has worked hard to achieve its set targets and to deliver the expected results.

Most of it has been reached in the two service areas in which ANA is active: Air Navigation Services and Aerodrome Services.

1 - Air Navigation Service Provision

- **Safety** in the provision of ANS has been further improved with an all-time low of occurrences of ground based incidents.
- **Capacity** of the airport is sufficiently high with a potential for further increase in traffic movements.
- **Cost-Efficiency** in the ANS provision is in line with EU wide targets in En Route services with Belgium.
- **Environment** impacts have at least not deteriorated; ANA was hampered in achieving more and doing more in approach and departure routings (Continuous Descent Operations).
- **Security** of service provision has increased with better controls and tools having been implemented.

Bigger achievements are subject to a look at future options: more strategically, longer term, less short-term and in the small print.

ANA delivered, as promised, a study and cost-benefit-analysis to State authorities on ANS provision, delegating Approach Service and CNS to a partner in FABEC.

The outcome of the study is promising. It is now in the hands of State authorities to decide what and to what degree the solutions can and will be implemented. The degree, to what the results of the study can be implemented has an impact on the future cost-efficiency of ANS and CNS provision in the longer term.

The results across all service departments are in Part A of this report.

2 - Aerodrome Services

ANA has been tasked to assume the role of the Aerodrome Operator at Luxembourg airport.

Clearly the biggest challenge for ANA is to achieve the European aerodrome certificate by end 2017.

ANA has worked during the reporting period to knit together the threads of the different parties involved: lux-Airport, the airlines, the main contractor Administration des ponts & chaussées, the supervisory authority DAC as well as State authorities to deliver a cohesive, coherent and tight plan and to implement a broad set of actions across the entire Luxembourg airport.

The progress achieved is substantial thanks to the efforts of all parties.

There is however broad room for improvement and for more brisk and profound action to reach the goal: the EU 139/2014 certificate in time and budget. The latter should and has to be a concern for all actors of the entire airport platform.

To all parties the message is: keep going what has started and don’t rest before starting the next in line actions. The time is now.

I thank all the staff and heads in all services that have worked hard to deliver good results. My thanks also go to our partners in business who have delivered their contributions as they promised.

John Santurbano, Director ANA

1. EXECUTIVE SUMMARY

This document is the Annual Report for the year from July 2015 up to end of June 2016 of ANA, the Provider of Air Navigation Services and the Aerodrome Operator at Luxembourg Airport.

This report summarises the activities, developments and results achieved in 2015-16 in comparison to the Annual Plan for the same period.

Scope of this report

Readers will find information on ANA's:

- performance and progress in air navigation services delivered;
- performance and progress in aerodrome related activities and as the Aerodrome Operator (APO) – especially in the certification works;
- performance as an ANSP in comparison to the performance indicators in the 2014-15 Annual Plan;
- which performance indicators and targets were set, and where ANA did not meet the targets, and if not: why;
- progress and performance in technical and operational areas;
- progress and achievements in our project portfolio;
- policies and processes in the human resources domain;
- and finally, progress and changes in the finance management and the financial results for the year 2015.

2015-16 Main strategic objectives

Ten major initiatives were set with respective targets to be achieved in 2015 in all key services:

1. Develop synergies and cooperation with partners in FABEC;
2. Apply modern technology where it offers benefits;
3. Increase efficiency and safety of ground movements;
4. Use European central services and common infrastructure solutions;
5. Optimise ANA services in line with requirements;
6. Apply measures to reduce environmental impacts and footprint;
7. Develop a common purchasing policy with partners in FABEC;
8. Create effective working conditions and work environment in ANA services;
9. Adapt manpower planning, recruitment and training of staff in line with competence demands;
10. The certification of the aerodrome in compliance with the new EU regulation 139/2014 and related guidance material.

During the last 12 months ANA has selected priority work items and rolled out the first assessment / preparation projects:

- ATC - identification of ANS service synergies with FABEC partners;
- CNS - synergies and savings in system hardware and software upgrades;
- Aerodrome Services (AER) - aerodrome certification preparation and service integration and
- MET - aeronautical and non-aeronautical services separation and financing.

Table 0 provides an overview and status in regard to the strategic projects related to the Synergies project.

Performance results in services and projects

Safety: In the Key Performance Indicators (KPIs):

- Effectiveness of Safety Management (EoSM) improved and all 3 specific targets achieved;
- ANA maintained its level in the application of Risk Assessment Tool RAT to ATM ground (100%) and applying RAT to ATM-SE;
- ANA has reached a high plateau in further improving in its Just Culture – remaining actions are not in the hands of ANA;
- the number of ATC related incidents have further gone down and reached a very low level;
- the reporting of occurrences was further improved;
- failure of safety critical equipment in ELE has been reduced and in CNS and MET maintained at low levels.

Quality: Internal QM structures, quality trainings and regular QM meetings at departmental and at ANA management level improve the overall quality level of services. The Integrated Management System is documented and maintained, performance management and –reviews are organised and performed.

SES compliance

ANA´s **Performance Plan** (PP) updates and the 2015 monitoring – for the first full year of applying the rules of EU Regulation 391/2013 in Luxembourg – were done at FABEC, charging zone and airport levels.

Common Requirements as in EU 1035/2011 are adhered to with some improvements in areas: **Security**: a security system is in place, processes

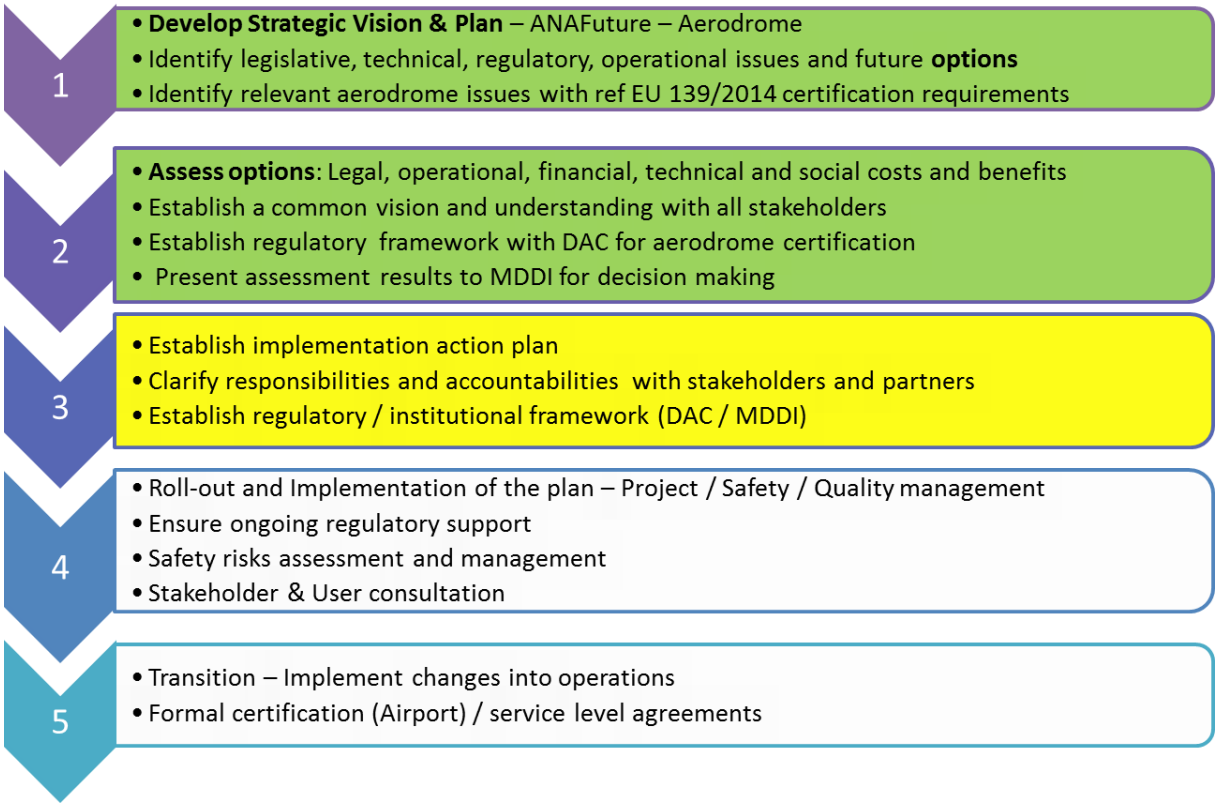
and policies defined and mapped against legislation.

ANA CNS delivered the safety case for the current surveillance system in January 2016 as the last item that was still required by EU Regulation 1207/2010.

Finance: In 2015 ANA has, with external assistance, started to improve the structures, processes, procedures and tools in use in the Finance Department, thus enabling many new features in cash flow and accounting, controls and management of finances.

Projects: Several SES related projects related were completed: Security measures, contingency plan and measures and others.

Table 0 – 2016 Strategic vision and action plan with all stakeholders (Status: June 2016)



Note: A top-down planning process in steps is followed. Green = finished; Yellow = ongoing / not finished; No colour = work not yet started

2. PERFORMANCE REPORT 2015

Performance framework

The Business Plan 2013-2017 is outdated and a new BP is under development: the Annual Plan 2015 - 2016 (AP) is the main basis for the performance reporting in this report[1].

Objectives: The main performance objectives of ANA for 2015-16 were:

- Maintain and improve performance in all performance areas;
- Continue and achieve the performance targets set in the 10 strategic initiatives.

ANS Performance in 2015[2]

The website provides news and information on all services and traffic, freight and passenger statistics[3].

The site also provides information on environmental programmes and achievements and their status.

Table 1 (next page) summarises the traffic, passenger and freight evolution since 2011 and compares the years 2013 – 2014.

Traffic evolution: The result of ANS related activities for the year 2015 compared to 2014 shows an increase in total commercial, business flights[4]; and an increase of transported freight[5] and passengers. This trend continues in 2016 as the Q1-Q2/2016 figures indicate. The number of local flights have decreased dramatically by 9,38% (see Figure 1 below).

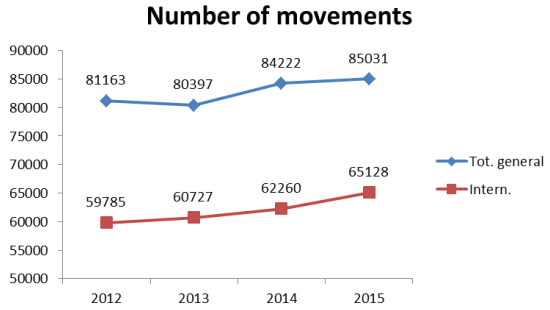


Figure 1 – Luxembourg airport – movement trends 2012-2015 (total and international)

Passengers: The trend from 2014 has continued and passenger numbers are up by 8,88% for a total of almost 2.7 million. Whereas the number of movements has only increased by 0.96% which indicates that airlines are filling their available capacity better. This trend is similar in other countries with the exception that passenger numbers did not increase this dramatically.

Freight: The freight handled increased by 4,25% to 738.136 tons. Industry-wide trends however indicate that in 2016 the international air cargo market is slowing down. This in turn can be expected to impact the airport's growth.

The planned extension of the Cargo Centre and P7 apron show the commitment of the airport to air cargo development and highlight the importance of the economic sector to Luxembourg.

Night flights: From January to December 2015 (incl.) a total of 1.806 passenger and freight night flights were handled (23:00 – 06:00hrs) of which four-fifths (80%) departures / arrivals were during the first hour (2301-23:59 hrs). These numbers have increased in conjunction with the increase in movements and freight. Cargolux accounts for 90% of these flights; others are special charter, state and medical flights.

A press conference on noise was held at the MDDI.

---

1 ANA (2013), ANA Business Plan 2013 – 2017, Version 1.0 (08/2013); ANA (2015) Annual Plan 2015-16, Version 1.0.

2 The data is for the entire year 2015, Jan – Dec.

3 http://www.ana.public.lu/fr/index.html

4 Combined scheduled, non-scheduled and business

5 Combined freight and postal transport

Table 1 - Traffic, freight and passenger statistics 2011-2015 and changes (increase) 2014 – 2015

Year	Total commercial	Total international	Total local	Total mvt overall	Total passengers	Total freight (t)
2011	53 854	59 999	23 406	83 405	1 791 231	656 651
2012	54 168	59 785	21 378	81 163	1 919 694	615 905
2013	55 316	60 727	19 670	80 397	2 197 331	673 500
2014	56 906	62 260	21 962	84 222	2 467 864	708 078
2015	58 119	65 128	19 903	85 031	2 687 086	738 136
Change 2014 - 2015	2,13%	4,61%	-9,38%	0,96%	8,88%	4,25%

PART A

ANA ANS / ATM SERVICES

3. ANS / ATM SERVICE PERFORMANCE

ANS Safety Performance

The Safety Management Unit (SMU) is responsible for the safety issues and managing the safety work in ANA as the ANSP.

The regular Safety Committee meetings and the safety management arrangements in place in ATC, CNS, MET and ELE ensure close contact, information exchange and coordination of all safety and quality items.

The update of the SAF targets and progress reporting on achievements is also done during the (now annual) KPI and management review meetings (in 2015 in October and in 2016 in April).

This report uses the latest available KPI / PI and target and achievement information as well as the specific performance actions applicable for this report[6].

EU Safety performance indicators & targets: The (European and respectively FABEC) KPIs and targets are the following end 2015 (the level reached in % is given in Table 2):

- Effectiveness of its Safety Management (EoSM) (target: reach Level 3 (C);
  - Results: (see Table 2 and Figure 2) **targets partially reached**
- Classification of Severity of ATM Occurrences (target: apply Risk Assessment Tool (RAT)) (ATM ground; ATM-SE related to operational and safety function);
  - Results: **targets reached**.
- Just Culture reporting (target: 20 items out of 24 on `Yes´)
  - Results: **target reached**[7].

EoSM is measured by verified responses to a questionnaire at State, DAC and ANA level.

Table 2 gives the 2015 status of achievement in ANA in the 5 Management Objectives of the EoSM [8] (see also Figure 3).

Table 2 – Status of achievement in EoSM in 2015

#	ANSP Objectives	Performance Indicator	Level Reached
1	ANSP safety policy and objectives	– Management commitment and responsibility – Safety accountabilities - Safety responsibilities – Appointment of key safety personnel – Coordination of emergency response planning/contingency plan – SMS documentation – Management of related interfaces	75% 50% 100% 25% 50% 75%
2	Safety risk management	– Safety risk assessment and mitigation	75%
3	Safety assurance	– Safety performance monitoring and measurement – The management of change – Continuous improvement of the SMS – Occurrence reporting, investigation and improvement	100% 75% 75% 87,5%
4	Safety promotion	– Training and education – Safety communication	50% 75%
5	Safety culture	– Establishment and promotion of safety culture – Measurement and improvement of safety culture	75% 50%

[6] This applies to all departments and respective chapters in this report.

[7] Status quo is unchanged since 2014 as remaining actions (4) are outside of the scope / reach of ANA.

[8] Ref. EASA Annex to ED Decision 2014/035/R; AMC3 SKPI - ANSP level

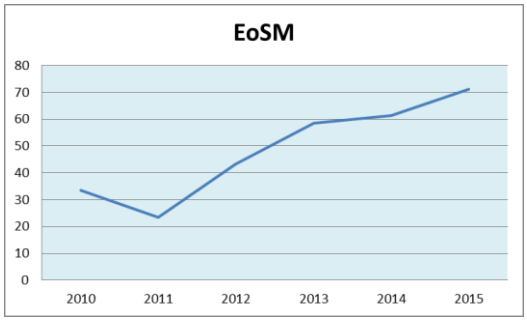


Figure 2 – ANA EoSM improvement trend 2010-2015

Figure 2 depicts the EoSM trend since 2010; for comparison reasons the score for 2015 is expressed in % based on the former scaling (RP1). The improvement is nearly 10% from 2014 – 2015.

Note: Safety EU / FABEC targets are coordinated and agreed to in FABEC Safety SC. As regards PI#2 – RAT application, it was decided that only ATM-SEs having an effect on OPS and an impact or potential impact on a safety related function on OPS should be scored and *´loss of redundancy´* and *´loss of supervision´* are not in the scope of the regulation.

Local PI's and targets are coordinated and monitored in the ANA Safety Committee which also takes corrective actions with the respective safety officers and heads of department. Figure 3 below shows the EoSM scores in 2015 for ANA.

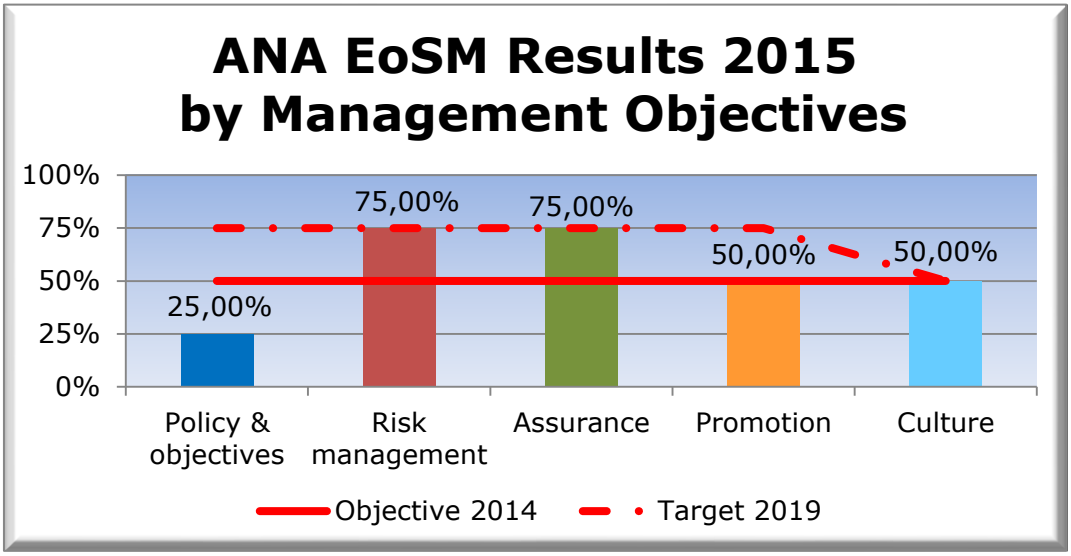


Figure 3 – Results (achievement scores) in the EoSM questionnaire for ANA (ANSP level) in 2015

The results indicate the limiting factor in the Policy & Objectives Management area: Coordination of emergency response and **contingency planning** which overshadow the otherwise good achievements in other policy areas. Similarly, the results in regard to **safety training** and the measurement and improvement of **safety culture** put limits to the achievement in regard to Safety Promotion and Culture. However, the results in safety assurance and safety risk assessment are promising and show that ANA has done a lot in these two core areas of the SMS.

Safety work: The Safety Management Unit (SMU) should be involved in all safety assessments - by verifying that the correct process has been followed and that the results are sensible. The safety assessments should be done by the project teams themselves. The SMU provides and adapts templates and documents in support for this work.

In this sense during 2015-16 SMU was involved in in the following major projects[9]:

[9] See project list in Table 16 for further details.

- A-SMGCS related projects; start of application of SSAS; this major project will require substantial efforts from the Safety Unit during 2016;
- AWOS/ATIS SSAS documentation updates and support during the shadow operations phase;
- SUR chain – support to CNS in the drafting and finalisation of the safety assessment;
- Voice Communication System (VCS) – fall back solution implementation (new project; started).

The **ANA Safety Plan** (biannual) published in the Annual Plan 2015-16[10] lists a number of objectives and activities that ANA planned to achieve.

ANNEX 2 provides a detailed update as by June 2016.

The results show that a number of actions were achieved / completed on time. Most actions concern continuous activities. Only few actions are late.

Audits and Corrective Action Plan (CAP) Items: The following audits and actions were held and actions implemented in 2015-16:

- *Contingency Plan audit* – the audit in conjunction with the ANA contingency plan went without a noticed NC or Observation;
- *Security audit* – the common requirements for security (EU 1035/2011) were checked and corrective actions implemented;
- *SSAS implementation* – CAP for final observations remaining from the audit of the (finalised) SSAS implementation is established and actions will be adopted by July 2016;
- *ATSEP competence* – NC and observations addressed, completed and sent to DAC;
- *Occurrence reporting* – NCs addressed and completed; sent to DAC;
- *ATC training organisation recertification* audit in accordance with the new EU 2015/340 regulation[11] held in June 2016 identified the gaps existing in the current Unit Training Scheme (UTS) after the coming into force of the new regulation.

Safety Management: The Safety Management Unit (SMU) participates in all internal management meetings and monitors safety related activities of ANA.

The most important internal meetings for SMU are

- *SMT – Strategic Management Team* where ongoing projects and activities are monitored, decided and corrective actions are taken;
- *Safety / Quality officer meetings* to address occurrences, potential threats and latent conditions;
- *Management reviews* to report, exchange and revise performance processes run by Quality Manager (QM);
- *Project leaders meetings* run by PMO;
- *Safety Committee* meetings run by SMU
- *ADIM Meetings with DAC*.

Safety KPI development at departmental level: ANA has set safety performance indicators and targets for safety related incidents in ATC and for safety related technical impacts on ATM from CNS, MET and the Electro-technical Service (ELE) that are observed by the departments in close cooperation with SMU.

The results on departmental safety indicators are reported in the chapters on ATC, CNS, MET, ELE and AER.

ESSIP - Safety Objectives achievements in 2015 cycle

The following Table 3 summarises the results in regard to the Local Single Sky ImPlementation Plan (LSSIP) implementation actions during the 2015 cycle in the European Single Sky ImPlementation (ESSIP) programme in safety related Objectives.

[10] See Annex 4 in ANA (2015), ANA – Annual Plan 2015-16. Luxembourg: ANA

[11] Commission Regulation (EU) 2015/340 of 20 February 2015 laying down technical requirements and administrative procedures relating to air traffic controllers' licences and certificates pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council, amending Commission Implementing Regulation (EU) No 923/2012 and repealing Commission Regulation (EU) No 805/2011

Table 3 – ESSIP Safety Objectives– Results / Status 2015

ESSIP OBJ	2015 Results	Measures to address performance gap
SAF10 - Airspace Infringement Risks	Occurence reporting data suggests that airspace infringements are rare in LU airspace;	No performance gap identified **COMPLETED**
SAF11 - Improve RWY Safety by preventing RWY excursions	A number of items have been implemented. Some actions in the Part 3 (ICAO) for the APO and ANSP are not yet fully implemented. Related also to aerodrome certification.	Performance gap identified Remaining actions will be addressed by L-AST **LATE**

With respect to SAF11 (and also to AOP03) the Luxembourg Airport Airside Safety Team (L-AST) deals with operational safety issues and involves all airport partners at working level.

The AER Steering / Working Group works on the infrastructure and other certification items related to these ESSIP Objectives.

Efforts to increase safety competence and performance

Aerodrome safety: Progress on aerodrome training and competence is reported in the Aerodrome Operator Part in this document.

Staff safety training: A safety training programme is in place and is followed by staff in accordance to their duties as safety officers / deputy safety officers.

The Safety training programme of ANA from July 2015 to June 2016 lists the following items (days/ trainees):

Newcomer training:

- Introduction to Safety Assessment (5/1);
- Safety Management System in ATM (5/1);
- QMS/SMS/PM Introduction (1/1).

Continuation / advanced training:

- EASA Basic Regulation 216/2008 – training (2/1);
- ATC (2/1);
- GNSS (5/1);
- Human Factors for ATM Safety Actors (5/2).

ATC Performance

ANA ATC (APP and TWR) safely handled 4,6% more international traffic in 2015 compared to 2014. Local movements came down by 9.4%.

The main targets for ATC in 2015-16 were (as stated in the Annual Plan for this period in the Strategic vision and initiatives table):

- Contingency measures audit (DAC).
- A-SMGCS implementation to continue as planned, finalise phase 1 (SAT, safety assessment and training.
- Support to the Approach synergy (APP Syn) project ANA – Belgocontrol and DFS and finishing the assessment on the CBAs.
- Implement FABEC related airspace projects (CDO, FABEC SWAP project related actions).

Details on the progress are given in the following paragraphs.

Strategic initiatives and projects

Contingency: The DAC audit of the contingency measures in place (in 11/2015) was performed and no observations were noted.

ANA ATC has prepared together with Belgocontrol a Memorandum of Understanding (MoU) on the contingency procedures with Belgocontrol which is still pending.

A-SMGCS implementation continued. After successful FAT in summer 2015 2 SMR sensors were installed in autumn 2015.

First tests of the A-SMGCS – TAR2 data flow via the installed IOP interface were successful; remaining issues in the flight data transfer to A-SMGCS were resolved in June 2016.

The project is slightly delayed; the deadlines for phase 1 Site Acceptance Testing (SAT) and training etc. however will be kept and it is still expected to go operational (testing) in autumn 2016. The system shall be in operational use at the end of Q1/2017.

APP SYNergie project support: ATC was involved and contributed as planned to the project with Belgocontrol and DFS.

The main deliverables of the two study - packages are the Cost and Benefit Analysis (CBA). Additionally, the studies include the necessary technical, legal / regulatory, operational and financial information.

FABEC projects: After a restart of the SWAP project in early 2015, ANA ATC had acquired the obstacle data needed for the design and implementation of revised SID/STAR. The project is currently frozen.

ANA also acquired the obstacle data for the CDO based on the initial design study. The aim was to have the procedures readily designed and implemented in 2016.

New VFR procedures in compliance with ICAO were designed, approved and put in operation in March 2016.

ATC participates in the winter operation cell and contributes to the drafting of respective procedures in the frame of the drafted Aerodrome Manual.

Safety KPI # 4 - ATM ground

The results of all KPI related performance indicators are summarised in Table 3.

The safety record in ATC in the Performance Indicator (PI) ATM ground contribution to incidents[12], shows further improvements compared to the PI targets defined in the KPI for ATC in 2015.

Figure 4 provides a graphical comparison with 2011 – 2015 figures (full years).

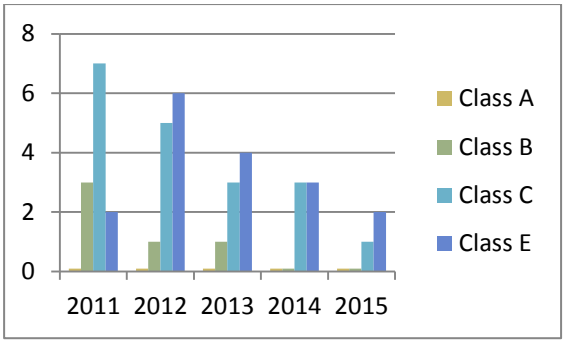


Figure 4 – ATC ground contribution to incidents compared to KPI#4 / PI#6 targets

Capacity – KPI # 5

Luxembourg airport and TMA are not constrained by a significant lack of traffic handling capacity.

There was no significant restriction in capacity, i.e delay due to ATC during the reporting period (see Table 4).

En Route: SES performance indicator and targets for ER flight efficiency (delays) are not applicable to ANA; ER service is provided by Belgocontrol and MUAC.

Terminal (arrival ATFM) delay (PI 7): in 2015, ANA had an average delay of 0,11 min/ flight[13] (national target = 0,48 min/flight; no FABEC target).

---

[12] This PI sets targets for the maximal tolerable annual number of ATM incidents (where ATC is involved), in 5 severity classes.

[13] January – December 2014 average airport ATFM delay as calculated by PRU (see PRU Dashboard: http://www.eurocontrol.int/prudata/dashboard/rp2_2015.html

Airport slot adherence (PI 7bis): As regards to airport induced delays (ATC departure delay and pre-departure delay) ANA currently monitors the slot adherence (ATOT = - 5 min / + 10 min CTOT) in accordance with EU Regulation 255/2010.

The 2015 results are in line with the demand in the EC Regulation[14] for a > 80% of slots adhered to (annual average around 82.6%). Figure 5 below gives the monthly non-compliant slot adherence rates from June to May for 2015 and 2016.

Further steps were taken to improve slot adherence and investigate likely reasons for a kind of stand-still in progress. The findings will be provided in Q3; a new target for slot adherence has already been set.

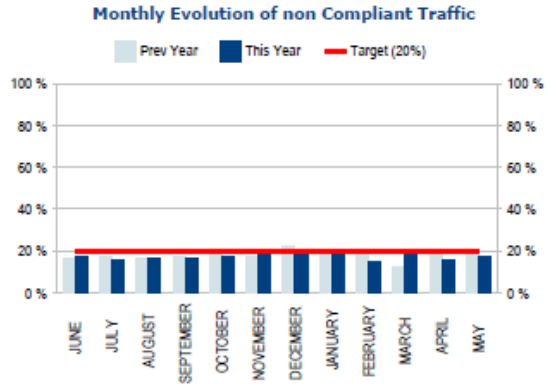


Figure 5 – Luxembourg ELLX non-compliant slot adherence 2015-2016 June-May rates[15]

ATFM pre-departure delay – PI 8: This is not measured locally due to a lack of data and no target shall be set therefore. The Network Manager provides annual figures for (calculated) ATFM pre-departure on the PRU dashboard (see footnote 13) which indicates a very low value in 2015 (0.02 min/flight).

More precise pre-departure information could be available in future based on airport data exchange with ATC (ongoing investigations).

Airport delay (taxi-out-time) – KPI# 6

PI 9 – Additional time in the taxi-out phase:

No target has yet been established.

This PI is also subject to the overall airport departure process and timing.

Note: The additional taxi-out time is computed by EUROCONTROL/PRU and can be retrieved on the PRU website[16] but the indicator is not available for all airports (Luxembourg is not included in the airport list).

The methodology defined by PRU is still under discussion. The final implementation has not been decided yet. PRU plans to organize a second workshop but no date has yet been defined.

The standard taxi-out time at ELLX set during winter / summer are currently under investigation. It is noted that during the summer season actual taxi out times are significantly shorter as the set standard times.

Capacity & Environment – KPI # 7

The EU - wide performance targets RP2 for ENV are of limited relevance for ANA[17] as regards the average en-route horizontal flight efficiency´ (KEA).

As regards of **PI 10** (CDO implementation) ANA agreed the Continuous Descent Operations (CDO) (horizontal flight efficiency) since some time and undertook the following:

- Belgocontrol designed in 2012, together with ANA, a Continuous Descent Approach (CDA) procedure for the routes to Luxembourg Airport (both RWY 06 and 24)[18].
- The procedures are further pending implementation due to continuing unavailability of Terrain & Obstacle Data (TOD).
- ANA acquired in 2015 the needed obstacle data made available by Belgocontrol to finish the procedures. The process is since on hold.

This KPI has not been reached up to now; the current status is reported in Table 4 (KPI/PI) and Table 5 (ESSIP).

For further details see also the Chapter on AIS.

[14] Art. 11 of Regulation (EC) 255/2010 (ATFM IR) states that (1) *´Member States shall ensure that where adherence to ATFM departure slots at an airport of departure is 80 % or less during a year the ATS unit at that airport shall provide relevant information of non-compliance and the actions taken to ensure adherence to ATFM departure slots.´*

[15] From: Eurocontrol NM (2016), ATFM departure slot monitoring 2016. Report.

[16] http://ansperformance.eu/data/set/tx_out/Taxi-Out_Additional_Time.xlsm

[17] This is calculated as the difference between actual and optimal flight trajectory for En route outside of a 40 NM circle around airport.

[18] Similar options for extended COD exist for the eastern APP/DEP routes handled by DFS.

Table 4 – Summary 2015 ATC KPI / PI achievements and monitoring results

ATC SERVICE - KPI´s # 4 - 7 - ATFM incidents; ANS delay; CDO - Achievement 2015 (full year)						
KPI 4	**Severity of ATM ground contribution to incidents**	**2012**	**2013**	**2014**	**2015**	**Targets**
PI 6	Severity Class A	0	0	0	0	1
	Severity Class B	1	1	0	0	2
	Severity Class C	5	3	3	1	12
	Severity Class E	6	4	3	2	24
KPI 5	**Arrival ATFM delay attributable to terminal & airport ANS**					
PI 7	Arrival ATFM delay in min	0,13	0,08	0,08	0,11	Local target: 0,48
PI 7 bis	Airport slot adherence (%)	84%	83,14	82,68%	82,6	>80%
PI 8	ATFM pre-departure delay in min	0,2	0,33	0,15	0,02	No target set
KPI 6	**Additional Taxi Out Time (TOT)**					
PI 9	Additional time in taxi out phase (min/ dep)	1,1	NA	NA	NA	No target set
KPI 7	**Average en-route horizontal flight efficiency**					
PI 10	Develop/implement CDO procedures for APP/DEP ELLX	NA	0	Not achieved	Not achieved; ongoing	1
	Common PI´s	**2012**	**2013**	**2014**	**2015**	**Targets**
PI 1	Maintain / delvelop competence of staff	Achieved	Achieved	Achieved	Achieved	Specific Actions
PI 2	Maintain regular stakeholder consultation intern	Achieved	Achieved	Achieved	Achieved	No target set
PI 3	Maintain regular stakeholder consultation extern	Achieved	Achieved	Achieved	Achieved	No target set

Competence & training – Common PI 1

All required training / refresher training for ATC staff was provided.

ANA has started in the last 6 month to investigate the requirements from the EU Regulation 2015/340[19] and assess the current training scheme (UTS / UTP) against new or revised requirements in preparation for a forthcoming audit.

ESSIP ATC Objective achievements

Table 5 summarizes the results in regard to ESSIP Objectives relevant for ATC.

The continued delay in the implementation of the Objective ENV01 is due to the pending decision on institutional and regulatory matters at State level.

[19] EU Regulation 340/2015 laying down technical requirements and administrative procedures relating to air traffic controllers' licences and certificates (…); see footnote 12).

Table 5 - ESSIP ATC Objectives – Results / Status 2015

ESSIP OBJ	2015 Results	Performance gap identified.
Airspace Management OBJ		
AOM13.1 - Harmonise OAT and GAT handling	OAT is negligible in LU airspace. Objective is not applicable.	No gap in performance
AOM19 - Implement advanced airspace management	ASM / ATFCM is handled at FIR Brussels level by EBBR via NM. The Objective is not applicable.	
AOM21.1 - Implementation of Direct Routing	Concerns FABEC ACCs. Not applicable for ANA.	
AOM21.2 - Implementation of Free Route Airspace (FRA)	Concerns FABEC ACCs. Not applicable for ANA.	
ATC & Data Processing OBJ		
ATC02.5 - Implement Area Proximity Warnings (APW)	Planned to be implemented.	No gap in performance
ATC02.6 - Implement Minimum Safe Altitude Warning (MSAW)	Is implemented since 2008.	
ATC02.7 - Implement Approach Path Monitor (APM)	Planned to be implemented.	
ATC07.1 - Implement Arrival Manager (AMAN)	ELLX is not a high density TMA. Not applicable.	
ATC12.1 - Implement automated support for conflict detection, resolution support information and conformance monitoring	No need to implement in LU TMA	
ATC15 - Implement in ER operations , information exchange mechanisms, tools & procedures in support of AMAN operations	No need to implement in LU TMA	
ATC16 - Implement ACAS II compliant with TCAS II change 7.1	Is implemented since 2012.	
ATC17 - Electronic dialogue as automated assistance to controller during coordination and transfer	OLDI functions supporting automatic assistance during coordination and transfer are implemented but not enabled. - To be done if required by neighbouring centers.	
ATFM		
FCM01 - Implement tactical Flow Management Service	Is implemented since 2007.	No gap in performance
FCM03 - Implement collaborative flight planning	Is implemented since 2007.	
FCM04 - Implement short term ATFCM	Not applicable to LU.	
FCM05 - Implementation of interactive rolling NOP	ANA does not operate an ASM system and ELLX is not coordinated slot airport. Not applicable.	
FCM06 - Traffic complexity assessment	Not justified / required in LU airspace.	
Airport ATS		
AOP04.1 / 04.2 - Implement ASMGCS Level 1 / Level 2	A-SMGCS level 1 continued implementation; level 1 will be finalised as planned in 2016.	No gap in performance
AOP05 - Implement Airport CDM	Not applicable.	
Environment		
ENV01 - Implement Continuous Decent Operation (CDO)	Luxembourg is late and did not achieve the target in 2015 due to pending TOD. ANA has acquired urgently needed data for specific projects depending onTOD.	Performance gap identified.

CNS performance

CNS is responsible for technical maintenance of COM, NAV, SUR and MET equipment and supports the technical realisation in projects (see Table 18 for a full overview of all projects).

The main achievements in 2015-16 were:

- **ATC ground systems**: support to the implementation of the A-SMGCS, technical planning and integration. CNS supported SELEX in the installation and test of the IOP Gateway.

  The installation of the WAM infrastructure (RUs to be installed at 4 sites) and 2 SMRs in the frame of the A-SMGCS project were finalised.

- **MET**: Implementation support to the AWOS / ATIS (Automatic Weather Observation System / Automatic Terminal Information Service) continued in 2015 and passed the observation period in early 2016.

  The FS11P RWY Visual Range (RVR) sensors installed on all runway locations (RWY 24, MID, 06) required a hardware update.

- **SUR**: The update of the existing SUR system is stopped; the supplier is asked for a new offer and to provide assurance for a stable system operation until end 2017 of the current SUR system pending ministerial decision (SYNergie).

  The replacement of the SuRveillance Message Conversion and Distribution Equipment (RMCDE) system by a new SUR Data Distribution System (SDDS) is delayed but will be finalised in 2016 for internal testing (network problems at the wider network level). This is subject to CNG – Network Group strategy discussions with other related network infrastructure items in which ANA participates.

- **NETWORK**: The implementation of a new centralised network topology and architecture based on IP is continuing.

- **IT / Server Infrastructure**: The installation of a new server infrastructure based on a virtual server solution was put on hold for the reason of the outcome of the SYNergie project decisions (pending).

SUR Interoperability and Safety

CNS is charged to assess the state and the performance of the existing SUR chain in regard to

a) Interoperability Regulation (IOP) EC 1207/2011 and related to other regulations and
b) Future requirements in the new ANA strategy (see ANA Annual Plan 2014-15, Table 3).

The performance requirements in EU Regulation 1207/2011 are achieved; the missing part was the safety assessment of the current surveillance system which was done and delivered to DAC (outcome pending).

The requirement of the IOP Regulation (safety assessment of the current system) was achieved.

ANA requires the current SUR system to be used until a final decision on the ANAFuture strategy and options is taken by the authorities. In the meantime a cost-efficient, safe and stable solution must be ensured. This work is still ongoing.

(See also the Table in ANNEX 3).

KPI #8 - CNS safety critical equipment

Safety - ATM technical effects (ATM SE): The CNS KPI # 8, performance indicator (**PI# 12**) applies.

The PI for the (technical) effects on ATM Services (ATM SE) is the ´Maximal tolerable CNS direct contributions to incidents´.

The 2015 – 2016 target values and the 2015 (entire year) results are given under **PI #12** in Table 6.

Table 6 gives a comparison of the 2015 (entire year) results with 2012 to 2014 in the three categories of equipment availability and the four performance indicators (**PI#11** and the related CNS service response times in **PI # 13** and **14**) of the CNS KPI.

Table 6 – CNS KPI / PI Performance 2015 and comparison with 2012- 14 achievements

CNS SERVICE - KPI # 8 - Availability of Safety Critical Equipment - Assessment / Achievement 2015						
KPI #8	**Conformity/reliability of safety critical CNS services**	**2012**	**2013**	**2014**	**2015**	**Targets**
PI # 11	Availability of safety critical equipment (min 99,90%)	25/31	25/31	29/31	28/30	30/30
	Availability of safety critical equipment (min 99,95%)	12/13	9/13	13/14	13/14	14/14
	Availability of safety critical equipment (min 99,99%)	04/04	04/04	03/04	04/04	04/04
PI # 12	Maximal tolerable ATM SE incidents (AA)	0	0	0	0	0
	Maximal tolerable ATM SE incidents (A)	0	0	0	0	0
	Maximal tolerable ATM SE incidents (B)	0	0	0	0	2
	Maximal tolerable ATM SE incidents (C)	84	100	70	67	45
	Maximal tolerable ATM SE incidents (E)	24	23	37	64	20
PI # 13	Average of service response time (standby)	hrs	not monitored	0h 46 min	0 h 30 min	< 2h
	Number of service response time > 2hrs (standby)	n	0	1	1	0
	Average of service response time (Office Hours)	hrs	not monitored	0h 14 min	0 h 3 min	< 2h
	Number of service response time > 2hrs (Office Hours)	n	0	3	2	0
PI # 14	Equipment calibration > 2 wks after due date	0	0	0	0	max. 2 weeks after due date
	Common PI´s	**2012**	**2013**	**2014**	**2015**	
PI 1	Maintain / develop competence of staff (OJT)	not monitored	not monitored	2/2	10 done in Q1, waiting for new competency scheme	
PI 2	Maintain / develop competence of staff (external training)	not monitored	not monitored	39/56	Done - see training plan	
PI 3	Maintain regular stakeholder consultation intern/extern	not monitored	2	2	Stakeholder meetings and SLA meetings done	

The results show that

- **no category AA - B** (´partially affected ATM service´) event occurred;
- **more category C** (´degraded ATM service while still able to function fully´) - nearly 50% more events happened than targeted;
- **much more category E** (´no impact´) occurred - about three times more than targeted in 2015 mostly due to technical effects.

Note: Although the category C and E incidents do not directly affect the provision of ATM services, they require attention and consume resources, time and efforts that could be better spent elsewhere. It is therefore pertinent to monitor and take action to reduce them for cost-efficiency, (manpower) capacity and service quality reasons.

The new AWOS / ATIS system has now been put into operations and remaining software issues are hoped to be resolved.

Equipment availability (performance): The technical safety record in CNS is governed by specific **PI# 11** in the CNS KPI (#8) with detailed targets assigned to all safety critical CNS equipment including ATC, MET and AIS equipment.

Table 6 gives the overall achievement as per category of availability against agreed performance targets. It is to be read in the following way (example first line): From the 30 different systems that should be available 99,90 % of the time 28 have met the target; 2 systems were less available. All in all the targets have been met.

A detailed breakdown as per equipment category is given in Table 7.

CNS intervention time (PI#13): The protection of the ATM system from effects or failures of the technical systems is at the focus of regular and preventive maintenance.

A 24hr / 7 days intervention service in case of equipment failure to ensure ATM service continuity is available at ANA either on site (during regular office hours) or via standby duties (during weekends, public holidays and outside office hours).

This service is a main task of CNS.

The regular calibration of equipment and required adjustment of the various sensors to maintain their reliability and validity was done within the timeframe of 2 weeks, i.e. as targeted.

Throughout 2015 the service response time (**PI# 13**) was only once above the response time during standby periods targeted and twice during office hours (that is > 2 hrs). The average response time (monitored since 2014) was shorter in 2015 than in 2014.
The reasons were the following:

- Some NAV Equipment is at the end of lifecycle;
- AWOS/ATIS MET system was replaced and eventually put in operations; remaining software problems caused several times a restart of the shadow operations period; the system is full in OPS since beginning 2016;
- RVR[20] system is still waiting to be replaced;
- Continuation of bugs and malfunctions of equipment (e.g. FDP);
- SUR equipment close to the end of lifetime and more prone to error and outage (i.e. RDP[21]).

Equipment outage: Results of the safety critical systems maintained in 2015 - 16 are provided in Table 7 in a condensed format as per category of equipment and reports the system outage results per equipment. The aim is to identify systems prone to fail more often than targeted.

The table shows that some equipment was more prone to outage or malfunctions in 2015-16 and required more often the intervention by CNS.

[20] AWOS = Automatic Weather Observation System; ATIS = Automatic Terminal Information System; METPRO RVR = Runway Visual Range system
[21] FDP = Flight Data Processor

Table 7 – CNS equipment availability in 2014-15 (July 2015 – June 2016)

Equipment	Outage (min)	Severity Class	Most failed equipment	> Target in 2015 over the 2 reporting periods of 6 month each
Voice COM	569	C or E	VCS	NO
Digital COM	209	C or E	None	
NAV Equipment	12815	C or E	DVORs LOCALIZERS NDBs DME	YES DME DIK LOC06 NDB LW
SUR Equipment	1691	C or E	FDP (OLDI, Stripprinters	NO
MET Equipment	2089	C or E	AWOS/ATIS METPRO	YES RVR & Flamingo sensors AWOS/ATIS
Power / Security & Measurement Equipment	163	C	None	NO

Note: target achievement is calculated once per 6 month period based on the monthly outage summary.

Training & stakeholder management

PI#15 & 16 – Training: The foreseen OJT[22] and external training targets for Air Traffic Safety Electronics Personnel (ATSEPs) in line with competence requirements were met (>80%).

PI# 17 – Stakeholder management the target of holding more than 6 stakeholder consultations was met in 2015.

ESSIP 2015 – CNS Objectives

Table 8 gives the status in the CNS related ESSIP Objectives in 2015 LSSIP report.

The table shows that ANA CNS has no immediate gap in performance in the Navigation and Communication Objectives of the current ESSIP. Most Objectives are not applicable or relevant to ANA / to Luxembourg.

An important step towards achieving interoperability and performance of the Surveillance domain was the delivery of a safety case for the existing SUR system.

It is not planned to renew or upgrade the current SUR system but to maintain it in stable condition for the time being. The replacement of the current monolithic system is however required but will only be planned once a decision on the SYNergie projects has been taken.

[22] On the Job Training

Table 8 – Status of SES (ESSIP) Objectives for CNS – Results in 2015 cycle[23]

ESSIP OBJ	2015 Results	Measures to address performance gap
CNS - Communication		
COM10 - Migrate AFTN to AMHS	AMHS implemented nand full migration is achieved in June 2014 (all functionalities)	No gap in performance
COM11 - Voice over Internet (VoIP)	Planned - will be implemented	No gap in performance
ITY-AGDL - ATC - air-ground datalink services above FL285	Not applicable to ANA	No gap in performance
ITY-FMTP - Apply common Flight Message Transfer Protocol (FMTP)	System is installed since 2012 and is fully compliant; the safety case was finalised end 2014	No gap in performance
ITY-COTR - Implement air-Ground automated co-	All OLDI messages as required are implemented.	No gap in performance
ITY-AGVCS2 - Air/ground voice channel spaciing (8.33kHz) in airspace FL <195	Planned to be achived by 2018 in ANA for ANA frequencies	No gap in performance - ongoing
CNS - Navigation		No gap in performance
NAV03 - Implement P-RNAV	ANA does not plan to implement P-RNAV as there is no justification / business case for it. NOT APPLICABLE.	
NAV10 - Implement APV (Approach Procedure with Vertical Guidance)	ANA has no plan to implement this and has no established need for it. NOT APPLICABLE.	
CNS - Surveillance		No gap in performance - ongoing
ITY-ACID - Aircraft identification	Planned to be implemented - pending feasibility and requirements.	
ITY-SPI - Surveillance performance and Interoperability	IOP ensured with other ANSPs using a common protocol (RADNET); the safety assessment of the existing SUR system is done but pending DAC decision	LATE - ongoing

[23] EUROCONTROL (2016), Local Single Sky ImPlementation (LSSIP) – LUXEMBOURG. Year 2015 – Level 1 & 2. Brussels: Eurocontrol.

CNS Strategic initiatives

The situation concerning the Strategic Initiatives and actions planned for CNS (see Annual Plan 2015-16, Table 2) are summarised below in Table 9:

Table 9 – Status of CNS strategic initiatives for 2015-16

Strategic Items Annual Plan 2015-2016 CNS	Status of achievement June 2016
Finish the interface projects IOP Gateway and SDDS	IOP Gateway sucessfully installed & running; FDP data used for setup of the A-SMGCS by Saab Sensis SDDS equipment acquired - installation and interconnection testing pending; multi-site interconnection delayed at SDDS programme level (Eurocontrol)
Integration of A-SMGCS and TAR2	TAR2 > A-SMGCS radar data exchange (interface) new offer from supplier; implementation expected: end 2016
Finalise the SUR upgrade plan and implement solution	Upgrade plan finalised; pending strategic decision (SYNergie)
Support the SYN studies on technical matters (SUR system, data exchange etc)	Support and inputs to SYNerie study done; finished
Finalise installation of new network topology and virtual server infrastructure	Network topology and virtual server infrastructure project on hold; pending strategic decision (SYNergie)
Investigate synergies and common purchase with FABEC partners.	Ongoing - FABEC partners Belgocontrol and DFS contacted, installation plans exchanged; pending strategic decision (SYNergie)

The results indicate:

- There is a delay in the A-SMGCS integration into the SUR chain (radar data). It needs to be technically enabled as the current interfaces don´t support the common standard (CAT). The integration of the radar data will be done at a later phase in the A-SMGCS project.
- The new networking (multi-site) infrastructure solution for the Surveillance Data Distribution System (SDDS) is also delayed. The positive side is that the installation of the SDDS at ANA will have no additional negative effect. It is to be expected that the continuation of the current RMCDE system will require extension of the current maintenance contract, efforts and costs.

The two projects:

- Virtualisation and network topology were put on hold – the virtualisation project is waiting for the SYNergie project to be decided. The network topology project planning is finalised, installation is pending. The A-SMGCS connection is done via the current network and interfaces.
- The SUR chain update planned is currently also on hold before implementation and a different solution may emerge with the SYNergie project decision.

The investigations with partners on possible common purchase / common implementation projects as regards CNS infrastructure revealed a number of opportunities.

It is likewise depending on the decision taken on the SYNergie and the general way forward in terms of CNS infrastructure management.

MET Performance

MeteoLux, the certified MET provider in Luxembourg provides two distinct services:

- **Aeronautical MET** services (weather forecast, warnings, observation and climatology service, weather reports etc.) for ATC, commercial and general aviation, SAR and the airport;
- **General MET** services (weather forecast bulletins, alert services, climatological bulletins and customised weather reports) for general public, national institutions and ministries.

Aeronautical MET

MeteoLux is compliant with the relevant ICAO standards applicable to aeronautical MET services at a high /very high level of service quality and integrity (see KPI results in Table 10).

The results for most indicators are fully in line with the targets with two exemptions:

- TAF (Terminal Aerodrome Forecast) indicator ´visibility´ in the first half of 2015 is below target.
- The update cycle for SLAs during the second half 2015 was not achieved.

Corrective actions are underway for both shortcomings:

- New guidelines issued in late 2015 are now implemented and working instructions will be updated and shall come into force before summer (04/2016).
- Pending SLA update with one airline is ongoing.

In 2015-16 ANA improved its aeronautical service provision and service quality in line with customer demand:

- update of existing Service Level Agreement (SLA) with a number of internal parties;
- participation below in the airport Winter Operations Cell.

The introduction to operational use of the new TELVENT Automatic Weather Observation System (AWOS) proved difficult.

MeteoLux took action with the successor company of the system to establish a final plan and was able to put the system in operation in autumn 2015. The system is now in full use.

A complete re-training of ATC users in the system use had to be done in autumn 2015.

In spring 2016 a final software update was successfully done.

Remote observation (camera) project: This is a project that aims to improve the regular and correct observation of the MET installations along the RWY via a camera system. The project has started and will be finished by the end of 2016.

MET Cooperation

The cooperation between MeteoLux and institutes and universities in Luxembourg and abroad as well as the partnership arrangements with other aeronautical (MET Alliance) and public MET services continues. This offers opportunities for synergies, improved service quality and cost-efficiency.

Of high importance is the partnership and working relations with the Belgian MET provider RMI[24] and Belgocontrol.

Lightning detection project: MeteoLux continued the investigations for an appropriate site for a lightning detection system in Luxembourg. Several attempts for testing at different sites had to be done before a suitable site was found. The installation of the system will be finished by the end of 2016.

The system will be used in cooperation with IMB (Belgium) via the Belgium Lightning network BELLS.

General MET services

One part of the MET services is related to outside aeronautical MET areas in cooperation with Luxembourg administrations, institutions and services.

The status of existing SLAs (**PI#25 / 26**) is:

- MET service support to Luxembourgish administrations (e.g. agriculture, police, fire brigades and rescue services), universities and international meteorological services continue:
  - Luxair – (lightning warning), (SLA since autumn 2013) ;
  - AGE – *Administration de la Gestion de l´Eau* (SLA since end 2014) ;
  - SNF – *Service de la Navigation Fluviale* (SLA since autumn 2014) ;
  - Den ATELIER – event organizer in Luxembourg (SLA since mid 2014) ;
  - ASS – *Administration des Services de Secours* (SLA signed end 2015).
  - The ´extreme weather alert service´ *Plan d'Intervention d'Urgence* (PIU) approved in 05/2015) and service launched for alert (red / orange) regarding wind (gusts), snow & ice, thunderstorm, extreme heat, extreme cold, heavy rain.

[24] RMI = Royal Meteorological Institute of Belgium

The communication of severe weather warnings for public distribution (press, radio) was further elaborated and improved and, the warning documents were simplified to reduce the workload during adverse weather conditions.

The *MeteoLux website* and the meteorological bulletin are of public interest and are in frequent use. Visitors of the website receive up-to-date weather information, warnings and forecasts.

- More coherent bulletin text and layout, improved web-page layout and information and other measures were implemented in 2015.
- (**PI#21**) - The number of visits of the website increased further by nearly 18% during 2015 and the subscriptions to the MET Bulletin by 14 % (see Table 10).

MET aims for synergies between both activity areas when planning projects and ensuring project sponsoring. Full cost-transparency of projects for the two areas is enabled.

PI#23 & 24 – Staff competence: MET staff keeps up-to-date competence in all relevant working methods and procedures in line with applicable ICAO standards. The training and competence targets set for 2015 were achieved.

In May 2016 a workshop with MET – prevision staff is planned focusing on important and critical meteorological conditions and weather phenomena (e.g. turbulence, icing etc.) to improve forecasting skills.

In Q2/2016 customer survey data were studied for improvement measures.

The procedures together with MET schools to prove that initial training of forecasters is compliant with WMO technical regulations will be followed in late 2016.

MET Strategic initiatives

The results regarding the Strategic Initiative (see: Annual Plan 2015-16, Table 2) are summarised in the Table in ANNEX 3 under MET.

- The AWOS/ATOS system was implemented;
- A financial study on service cost allocation, financing and controlling started in 2015 and included MET service provision for both service areas as an important basis for future financing decisions at State level.

The remaining step for State budget provision for non-aeronautical services will start in the second half of 2016.

Table 10 – Performance results against targets in PI´s for ANA aeronautical MET in 2015-16

MET SERVICE - KPI # 9 - Results 2015-16 results against set PI targets						
KPI # 9	**Conformity/reliability of safety critical aeronautical MET service services**	**2012**	**2013**	**2014 Q1+2/Q3+4**	**2015-16 Q1+2/Q3+4 / Q1 2016**	**2015-16 Targets**
PI # 17	Timely provision of METAR	97,80%	98,50%	98,5/98,0%	98,7/97%	≥ 97 %
PI # 18	Timely provision of MET bulletins	96,60%	99,50%	98,6/98,1%	98,9/98,1%	≥ 96,5 %
PI # 19	Timely provision of TAF	98,80%	97,30%	99,7/99,8%	100%/NA	≥ 97 %
PI # 20 TAF verification accuracy (Data after / are for the period Oct 2015 - Mar 2016)	Wind direction	No data	99%	100,00%	100%/100%	≥ 90%
	Wind speed	No data	99%	99,00%	99%/99%	≥ 90%
	Wind gusts (in stable conditions)	No data	90%	0,96%	91%/94%	≥ 90%
	Visibility	No data	41%	44,00%	15%/43%	≥ 30 %
	Present weather	No data	36%	50,00%	44%/39%	≥ 30 %
	Ceiling	No data	44%	43,00%	42%/45%	≥ 30 %
PI # 21	Increase visits Meteolux website	No data	No data	5,60%	17,90%	> 0
PI # 22	Increase subscribtions to MET Bulletin	No data	No data	2,30%	14,10%	> 0
Common PI´s		**2012**	**2013**	**2014**		**2015**
PI # 23	Application of WMO competence assessment	not monitored	Yes	Yes	Yes	Applied
PI # 24	Specific Meteolux related training	Yes	Yes	Yes	Yes	Provided
PI # 25	Update cycle of SLAs respected (internal stakeholders)	No	Yes	Yes	Yes	100%
PI # 26	Update cycle of SLAs respected (external stakeholders)	Yes	Yes	Yes	Yes/No	100%
PI # 27	Customer polling	No	No	Yes	Yes	once/year

Notes: The data for 2015 (Q3 and 4) for indicators PI#19 and 20 are only available in July. These data is externally analysed and done in cooperation with MET Alliance partners. The TAF verification PI measures the (mean) correctness of prediction (correct hits / false alarm and correct against random prediction) and is a measure of validity.

AIS Aeronautical Information Service

The situation as regards the function of ANA AIS has not changed: AIS performs three main functions: ARO, AIS and TAX.

- The **ARO** (ATS Reporting Office) is responsible for the reception, verification, change and distribution of flight plans and associated messages. Other responsibilities are to alert the appropriate organisations regarding aircraft in need of search and rescue services and to assist them as required (Alerting Service). Furthermore Pre-Flight Information Bulletins (PIB) and SNOWTAM are issued as well as information about Air Traffic Flow Management (ATFM).
- The Aeronautical Information Service (**AIS**) has to ensure the flow of information necessary for the safety, regularity and efficiency of international air navigation through publication of the Aeronautical Information Publication, or AIP, for static (or permanent) information and distribution of Notice(s) to Airmen, or NOTAM, for dynamic (or temporary) information.
- The **TAX** sub-unit performs the computation of the Terminal Navigation Charges (TNC) in accordance with the EU charging regulation and local modulation scheme. This task consists in the monthly calculation and invoicing of terminal charges and is directly related to and described in the Finance Chapter.

2015 – 2016 Activities and projects

AIS's main activities and projects in 2015-16 were:

- Development of an AIS/ARO - **IAIP** (Integrated Aeronautical Information Publication; ICAO Annex 15[25]) and processes with external, internal and corporate partners.
- To contribute and support aerodrome certification activities.
- To prepare internally for taking on the allocated role to handle the aeronautical data assigned to AIS in compliance with applicable requirements (ADQ rule) in regard to TOD.

IAIP development: This work in 2015/16 aimed to develop a procedure and processes to

- determine and formalise AIS work flows;
- improve the cooperation between AIS and Belgocontrol;
- demonstrate and describe the roles and responsibilities of ANA AIS as an AIS provider;
- address the EASA UNCs in regard to the requirements for conformance with the applicable standards:
  - ICAO Annex 15 and ICAO doc 8126;
  - Eurocontrol AIS data process (EAD[26]);
  - identify and address the applicable requirements of EU 73/2010 (ADQ) requirements.

These actions will be finalised and released in 2016 as part of the new AIS data provision procedures.

In a second step external promotion of the procedures will follow before agreements with external data providers (SLAs) will be signed.

> Note: ANA AIS follows the developments in the TOD WG and the ADQi WG (Eurocontrol) and amendments in EASA and ICAO.

AER / aerodrome certification: AIS was actively involved in AER certification activities in 2015-16; these activities will continue. Details of the activities in which AIS is involved are provided in the AER (Aerodrome) Chapter.

One item was the acquisition of RWY and obstacle points on the airport and its vicinity below to the certification work.

Aeronautical data provision / TOD (Terrain & Obstacle Data): The availability of 3-dimensional aeronautical terrain and obstacle data is a prerequisite for a number of implementation projects and ATC procedures (e.g. CDO), aerodrome infrastructure projects (e.g. buildings, masts, navigation aids) or its vicinity (e.g. power lines, high buildings) and or in the country (e.g. windmills). (See item on AER above.)

The data must be handled according requirements of the Aeronautical Data Quality (ADQ) regulation and ICAO Annex 15.

Important decision on TOD in 2015-16: The MDDI issued in November 2015 a ministerial order[27] allocated responsibilities to AIS and DAC in respect to the oversight and management of TOD and asked the department responsible for territorial planning to enable AIS to receive and handle the terrain and obstacle data.

There was some progress in setting up the required framework since the ministerial order has been let:

- the technical requirement document for the CfT was reviewed and amended in accordance with latest requirements and local needs;
- the process to establish the State and regulatory framework has started.

[25] See: Roadmap for the Transition from AIS to AIM, ICAO, first edition – 2009. Substantial amendment of ICAO Annex 15 is ongoing with a new PANS AIM.

[26] European AIS Data

[27] Arrêté Ministériel dated 25 November 2015 (signed).

Other activities: AIS participated in meetings of AROC, the Winter Operations Cell, and Airport User Committee (AUC) and is represented in external groups (Eurocontrol, FABEC).

Si below in September 2015, the contingency location beamer is operational ensuring business continuity in contingency situations as described in the ANA contingency plan.

KPI Performance

Table 11 below lists the AIS KPIs together with the status of achievement in 2015 (Q1 – Q4).

Table 11 – AIS performance results 2015

AIS SERVICE - KPI # 10 - Integrity / quality of aeronautical information - Achievement 2015				
KPI 10	**Integrity / quality of aeronautical information**	**2014 (Q1-Q4)**	**2015 (Q1-Q4)**	**2015 Targets**
PI 21	% of completed SLA´s with external data providers	0	None	100%
PI 22	Data quality of Luxembourg aeronautical data published by Belgocontrol	1,77%	3,82%	0%
PI 23	Data quality of raw data received and transmitted by AIS	6,94%	0%	0%
Common PI´s		**2014**	**2015**	
PI 1	Maintain / develop competence of AIS staff	Done	Done	No target set
PI 2	Maintain regular consultation and exchange with ANA internal stakeholders	Done	Done	No target set
PI 3	Maintain regular consultation and exchange with ANA external stakeholders	Done	Done	No target set

Notes: The measurement of **PI# 22** is the number of detected differences between the data issued by AIS and the data actually published by Belgocontrol in % of all published data.

Similarly, **PI# 23** measures the number of detected differences between data received from an external data provider and the data that is transmitted by AIS to Belgocontrol. AIS perform internal consistency etc. checks in % of all data received from a data provider.

As regards **PI#21** no SLA with external data providers was concluded in 2015-16. Without a clear mandate for AIS and at the same time an obligation for external data providers (i.e. windparks, building authorities…) and in the absence of agreed methods, procedures and tools, this task cannot be achieved.

It is hoped that in future this situation will change based on the Ministerial decree.

Regarding the common **PIs 1 – 3** it is to be noted that:

- AIS /ARO staff followed different training sessions / courses in 2015.
- AIS is involved and participates in all relevant meetings / consults with internal parties: ATC (on flight issues; alerts etc.), CNS (AIS equipment), SIS (winter ops procedures and coordination with MET, ATC, AER).
- AIS conducts workshops with Belgocontrol AIM to assure conformity and improve reliability of service.

AIS ESSIP achievements 2015

Table 12 gives the status of AIS-related ESSIP Objectives as reported in the Luxembourg 2015 LSSIP report.

Table 12 - ESSIP Objective AIS – Results in the 2015 reporting cycle

ESSIP OBJ	2015 Results	Measures to address performance gap
AIS/MET Briefing **INF04 - Implement integrated briefing**	This objective applies to AIS and MET The establishement of Level 5 briefing facilities at the airport proves difficult and costly. Lack of progress. One improvement is the installation of one additional **visio** briefing facilities for VFR pilots (video-briefing facilities).	ANA is **LATE** in implementing Level 5 integrated (AIS/MET) briefing The project on **vision** briefing was finished end 2015.
Aeronautical Data **ITY-ADQ - Ensure quality of aeronautical data and areonautical information**	This objective applies to AIS and AER ANA AIS issues data to Belgocontrol as the next intended user and publisher of information. Formal arrangements are in place and documented in IMS. ANA AIS lacks inputs and instructions from a competent authority on aeronautical data handling, management and maintenance in line with EC 73/2010 requirements, in particular eTOD.	State and DAC regulatory actions as regards AIS role and the applicability of the ADQ requirements are **LATE.** ANA / AIS has not been appointed as aeronautical data provider for Luxembourg.
Aeronautical Data **INF07 - Electronic Terrain and Obstacle Data**	This objective applies to ANS and APO (Aerodrome) The ministerial order was published in Nov 2015. Institutional and organisational framework is under development. The technical requirement doc for the acquisition of eTOD are available.	State and DAC framework arrangements and regulatory actions are **LATE.** The decision on the tender action is pending; the related institutional and regulatory issues are not yet decided.

Table 12 indicates that ANA has an immediate gap in the achievement of the current ESSIP objectives relevant for AIS in regard to two objectives:

- **Integrated briefing level 5**: Full level 5 briefing is planned but not yet implemented. The plan is to have it available for November 2016. **Visio briefing:** AIS and MET planned visio (video based) briefing facilities; the technical equipment was installed (by CNS). The facilities are based in the VFR environment.
- **ADQ implementation (EC 73/2010)**: This item relates to the continuing status of AIS as a not certified service of an AIS service provider.
- The issue on **TOD** is recognised at all levels and it is decided that AIS will be the service to handle and maintain the data on obstacles and terrain. The process to set up the framework has started.

AIS - Strategic Initiatives

As indicated before, the process and proposal established and sent to the MDDI for a national policy / regulatory framework for aeronautical data and information handling in line with ADQ Rule is still pending.

The eTOD tender action is also still pending. This hampers inter alias the acquisition of electronic obstacle data at the airport and its surroundings which is urgently required in order to enable pending PANS OPS changes, support aerodrome certification cases and implement the developed CDO operation procedures in Luxembourg airspace.

In order to overcome the backlog in these developments, ANA has taken to acquire the obstacle data and mapping information using a direct measurement approach.

It should be mentioned, that this was a quick fix for the airport related areas and concerns data mainly in the frame of the certification work.

Obstacle data (country) for CDO implementation and PANS OPS actions are also available now to continue with related work.

However, this does not replace the need to acquire and maintain an electronic database of TOD for Luxembourg on an ongoing basis and in line with the ICAO Annex 15 requirements.

PART B

ANA AERODROME SERVICES

4. ANA AERODROME SERVICES

AER - Aerodrome

In May 2014 ANA was asked by the MDDI to assume the role of the Airport Operator (APO) and lead the works towards the certification of Luxembourg airport by the end of 2017.

In the first part, this report gives an overview of the main activities and projects as part of the regular services provided by AER and the achievements in the major KPIs and PIs.

In a second part it will provide an overview of the certification and compliance work done during the reporting period in the work packages and tasks of the Aerodrome Steering WG.

Finally, and in separate chapters, it will report about the electro-technical department ELE and of the fire brigade and rescue service SIS

Overview

In continuation of the arrangements in place in ANA at that moment, the AER department and related services (chiefly SIS, ELE and AIS) were put in charge with the work. In 2014 the internal arrangements and allocation of manpower resources were done and work started immediately with other airport partners.

This work continued with increasing efforts in 2015 and 2016. The AER and related service partners are performing on a day-to-day basis:

- Project-managing, contracting, coordinating and monitoring the **maintenance of the RWY and TWYs** in close coordination with the main contractor PCH.
- Coordinating and performing **safety works** in compliance with safety requirements; the SMU verifies then that this is done in accordance with procedures and has a sensible output.
- Technically specifying, tendering and contracting related **aerodrome studies** (e.g. RWY marking, TWY resistance; buildings and obstacles in the vicinity of the airport).
- Leading and managing the **Winter Operations** Cell, coordination and implantation of actions during conditions of snow and ice; decontamination and liquid storage management.
- Conducting **RWY inspection** (e.g. FOD, signals) in coordination with ATC, MET, SIS.
- Together with SMU monitor, report and develop actions regarding **TWY incursions**.

Wildlife Services: After an internal re-organisation airport wildlife service was moved under the ADM Department in 2015.

RWY and TWY projects & activities

RWY / TWY maintenance: The prevailing conditions and state of the RWY and also TWYs demands regular monitoring and repair works if found necessary.

During the reporting period 2015 -16 several re-surfacing activities on the RWY and TWYs had to be done in close coordination with the services from *ponts et chausseés* (PCH).

Two implementation periods during the reporting period, one in autumn 2015 and one in spring 2016 were organised, coordinated and monitored.

During the times of re-surfacing work in progress the airport was closed from 00:00 – 06:00hrs but remained open at all other times.

Besides some issues during the autumn 2015-16 campaigns works went satisfactorily well with limited restrictions to traffic (see **PI# 57** in Table 14).

The ´convention de travail´ in place between ANA and PCH was still the basis for the coordination between ANA and PCH in 2015. ANA / AER had drafted an SLA and asked the agreement by PCH which was achieved in 2016.

The SLA covers the planning, organisation and execution of

- aerodrome infrastructure works;
- surface markings;
- supervision of the works;
- RWY/TWY inspections;
- winter (snow removal) and summer (grass mowing / removal);
- civil engineering works;
- maintenance of the (surface water) retention basin.

RWY / TWY Refurbishment project

In view of the overall unsatisfactory RWY conditions established in several studies and known since long ANA pushed the issue forward to reach agreement with the MDDI and PCH on a profound planning for the complete refurbishment and in fact replacement of the entire RWY.

As one important step ANA proposed and achieved approval for a governance structure that will ensure proper coordination, competence availability and management, risk sharing, and financing to name some of the issues that need to be resolved.

The efforts will need to increase. ANA has employed more resources into the planning and preparation of this project. The current (June 2016) status of work packages and milestones is depicted in the project overview in ANNEX 3.

The project poses a number of critical issues to be resolved beforehand or risks to be mitigated during the works. The demands to work planning and logistics of this big project are high and ANA is aware of the risks involved and will ensure that proper oversight and controls are in place.

This will put forward a number of critical issues to be resolved beforehand or mitigated during the works.

The demands to work planning and logistics of this big project are high and ANA is aware of the risks involved. As one important step ANA proposed and achieved approval for a governance structure that will ensure proper coordination, competence availability and management, risk sharing, and financing.

Runway Rehabilitation Status

The scope of the runway rebuild project comprises system-wide works on the runway and its elements, which will result in compliance and hence safety improvements and infrastructure improvement.

The current **ILS** system is reaching design life and is expected to require a replacement that is being estimated around the time frame of the runway works. Whether this replacement can be timed is under discussion.

Foremost the **scope** of the works has to be approved.

- As of May 24th, 2016, Part A of the scope document, outlining high level requirements has been jointly agreed with APC. This document is titled "Runway rehabilitation at ELLX in the frame of aerodrome certification for 4E with exception for Code F",
- As of May 25th, 2016, this is now under review with the MDDI and key users
- This is a high level document will be supported with a detailed scope, and scope of works document, in the near future.
- This document makes the case for a key runway element, the runway width. For the certification, a 45m wide runway with 7.5m paved shoulders is a compliant option. Overall this option provides the same paved width as today. This element is important as it has a substantial impact in the resources and time taken to plan and complete the project.
- Going forward ANA is seeking approval from the MDDI and users for a 45m width with 7.5m paved shoulders.
- Several other detail elements are under discussion and investigation such as the lighting system to be used (for example implemented Inset vs. Elevated and LED versus Halogen lights).
- The proposed RESA dimensions have been approved by DAC (item is closed).

RWY friction testing: During the cold periods, RWY conditions have to be checked and tested depending on certain meteorological conditions. The friction testing vehicles used to measure the RWY are operated by SIS.

The last supplied vehicle had to be returned to the supplier for repair and rigorous testing before being put into service once again. A replacement vehicle provided by the supplier in the interim was in use. Before start of the cold season in 2015 the new equipment was in use and delivered reliable and valid results.

RWY Inspection: The inspection of the RWY is a shared activity done by AER and SIS. Proper training of this activity and regular assignment to perform this duty are key factors for inspection quality.

The training programme is defined and rolled out as of May 2016; it includes a train-the-trainer module.

Snow removal: This work is performed in case of need by PCH on a 24hr operations basis. **PI# 57.** below Table 13 represents the average elapsed time between the call for removal and the start of removal actions during airport operational hrs.

The results indicate that the time before the start of actions could probably be shortened.

AER KPI Performance

The overall results for the AER **KPI # 19** and specific PIs are given in Table 13.

It is to be noted that the KPI and related PIs are coordinated with the other partners responsible for reporting and monitoring:

- SIS – Fire brigade and rescue service;
- SMU – Safety Management Unit;
- Wildlife management – ADM Department;
- RWY / TWY maintenance & snow removal - Ponts et Chaussee (PCH).

Other AER Functions & Services

FOD: SIS holds a register and all reports of all FOD collected during regular RWY inspections or reported / found by other parties.

Objects found are classified and reported to SIS by AER and the wildlife service (in case of wildlife debris) (**PI# 52**).

Bird strike and wildlife reports: The wildlife service in ANA is involved in the inspections and classification of wildlife species found (**PI# 52**) and correlates the findings with bird strike reports. **PI# 54** provides the results as per 10000 movements.

Since March 2015 separate registers are kept for confirmed (reported) and unconfirmed (not reported) bird strikes; the latter statistic is based on bird debris obviously subject to a strike that went unnoticed (Figure 6).

.

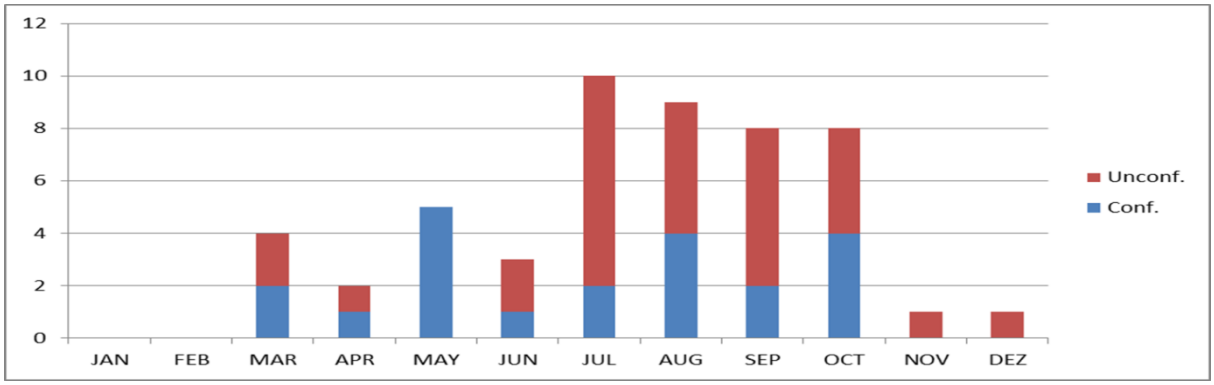


Figure 6 – Unreported and reported bird strikes – Mar to Dec 2015 at Luxembourg airport

Note: The fact that wildlife FOD is higher than the number of confirmed bird strikes as due to the fact that not all bird strikes are noticed by pilots and/or not reported. Also due to increased consistency in reporting bird-strikes (Form C) more reports were received during 2015 as before. These two facts must be taken into account when looking at the increase in the number of wildlife FOD (confirmed + unconfirmed) in 2015 compared to 2014.

The **results** show that the efforts made in the AER domain payoff: The number of **incursions** (RWY & TWY) as well as the number of confirmed = reported) **bird strikes** remain at a low level.

The register of bird species subject to strikes indicates a high proportion of bird of prey compared to other species with the common kestrel (Turmfalke) at the peak.

An analysis of the conditions prevailing during 2015 shows that this is most likely the effect of the dry weather in summer, causing an increase in the mice population (with lots of dry and low grass) thus attracting more birds of prey to the airport. And these are consequently found in higher numbers as FOD.

Table 13 – Results in aerodrome service related PI´s – 2015-16

AER SERVICE - KPI # 19 - Safety, quality and integrity of aerodrome service Achievement 2013 - 2015 (2016 / Q1)						
KPI 19	**Safety, quality and integrity of aerodrome service**	**2013 (Q1-Q4)**	**2014 (Q1-Q4)**	**2015 (Q1-Q4)**	**2016 (Q1)**	**Targets**
PI 52	FOD # according classification scheme for FOD (Unit responsible: SIS; see KPI# 16)	Birds: 29 Other A.: 4 Metal: 7 Veget.: 3	Birds: 29 Other A.: 4 Metal: 7 Veget.: 3	Birds: 42 Other A: 5 Metal: 5 Vegetation: 3 Other items: 14	Birds: 1 Other A: 2 Metal: 1 Vegetation: 0 Other items: 3	No target set
PI 53	RWY incursion (Unit responsible: SMU)	ACFT: 3 Cars: 1	ACFT: 2 Cars: 0	ACFT: 2 Cars: 0	ACFT: 1 Cars: 0	0
PI 54	# bird strikes per 10000 acft movements (responsible: Wildlife)	NA	Area 1: 1,39 / 1,95 Area 2: 0	Area 1: 2,19 / 2,73 Area 2: 0	NA	0
PI 54 bis	TWY incursions (Unit responsible: SMU)	ACFT: 0 Cars: 3	ACFT: 0 Cars: 3	ACFT: 2 Cars: 0	ACFT: 0 Cars: 0	0
PI 55	Obstacles erected (autorised/non-authorised)	non-auth.: 3 author.: 7	non-auth.: 4 author.: 10	non-auth.: 0 author.: 5	non-auth.: 0 author.: 1	un-auth. = 0
PI 56	Delayed RWY opening due to Work In Progress (WIP)(resonsible Unit: AER)	NA	2h 10	4 h 35	0 h 30	0
PI 57	Delayed RWY opening due to snow removal (resonsible Unit: AER)	NA	NA	0 h 52	0 hr 53	0
PI 58	Number of SIS interventions on incidents classification (responsible Unit: SIS)	Fire: 159 Techn.: 86	Fire: 152 Techn.: 95	Fire: 161 Techn.: 110	Fire: 30 Techn.: 21	Target to be defined
	Common PI´s					
PI 1	Maintain/develop competence of staff	Several ACI courses on safety held	ACI - ICAO Annex 14, EASA certification	Competence/Trg. Defined / evaluated Job description done	InspectorTrg defined	Target to be defined
PI 2	Maintain regular consultation with internal stakeholders	Achieved	Achieved	Achieved	Achieved	Target to be defined
PI 3	Maintain regular consultation with external stakeholders	Achieved	Achieved	Achieved	Achieved	Target to be defined

PI# 54bis – TWY incursions: This additional PI added (not in Annual Plan 2015-16 for AER) concerns reported incursions. No incursions caused by cars were reported in 2015 but two aircraft incursions.

AER continued in 2015 to put up signs to increase RWY safety and is helping to remove ambiguity in the communication between drivers and ATC. This plan is under implementation.

An important step was made within the aerodrome certification group with drafting and agreeing with other parties on a new aerodrome driver certification and driving rules. This work is now finished and agreed drivers licence and training principles are in place (see also the Aerodrome Certification chapter (next)).

PI# 58 – SIS interventions: The number of interventions in case of technical events and fire – two broad categories – are not increasing substantially.

A further breakdown of the different types of interventions performed on the aerodrome will be provided in the future.

The Aerodrome Certification project

The Aerodrome Certification Project in line with the EU 139/2014 Regulation[28] is of principal importance for ANA and all airport partners

The regulation sets the (revised and partially new) requirements for the work and practically replaces the national law passed in early 2013[29]. It is the basis for the activities towards certification of the airport.

Full understanding of the applicable regulation and respective EASA Accepted Means of Compliance (AMC) and Guidance Material (GM) is a key part for the success.

The AER team is responsible for giving directions in this regard, for the overall project management, and is a leading party in the coordination, organisation and allocation of the work to be performed.

The implementation of regulation EU 139/2014 requires changes to the responsibilities of some departments and personnel within ANA.

Restructuring departments involved with aerodrome operations to ensure a coherent and integrated management of all aerodrome related activities is a consequence.

General overview

The **Certification Steering Group** was set up as the steering body for the certification work. All aerodrome partners participate and contribute to the deliverables in their respective capacities as required.

The main task is to draft a consistent, coherent and valid Aerodrome Manual which includes (revised and harmonised) procedures and processes as well as the relevant aerodrome related safety measures and methods.

The involvement of **stakeholders at State level** and **DAC** to establish the regulatory framework and participate in the certification process started in late 2015. DAC has issued a preliminary visit report in late 2015.

The involvement and active participation of all airport stakeholders (ANA Departments AIS, SIS, SMU, ATC, Luxair, Cargolux, lux-Airport, PCH, AUC[30] and Luxfuel) is ensured.

Aerodrome Manual: Work continued on the Luxembourg Airport Aerodrome Manual that will be used as the basis for certification of the aerodrome under the provisions of regulation (EC) 139/2014. A number of different organisations are involved, coordinated by ANA in its role as assumed aerodrome operator.

The manual will integrate content from existing documents (e.g. PTO[31]) where it remains valid, and will describe the processes, procedures and arrangements necessary to manage the airport as one integrated process.

The status of developments of the manual is:

- Draft version finished and agreed on by airport partners;
- First proposal for publication issued.

Aerodrome staff competence

The effort to develop staff competence in AER and on all relevant aerodrome matters is a continuous task. Competences needed for any position at AER have been identified and formalized in detailed job descriptions.

A training program for Aerodrome inspectors is currently ongoing. It includes Classroom training (external provider), OJTs and practical assessments.

In order to expand the initial group of aerodrome inspectors and to ensure continuous refresher trainings, the same program will be organized and provided by AER personnel in future periods. Therefore selected personnel of AER will attend train-the-trainer courses / workshops to enable them to provide internal trainings (classroom and OJT).

In addition to the aerodrome inspectors trainings, runway safety trainings and other refresher trainings are planned for AER personnel later in 2016.

Table 13 (**PI# 59**) refers to AER personnel training in aerodrome safety and in ICAO / EASA requirements relevant for the certification work.

The following training courses were held (number of staff attending in brackets):

- Introduction to Project Management - Part 1 (4);
- ATM Occurrence Reporting and Investigation Tools (4);
- Introduction to Safety Assessment (1);

[28] EU Regulation 139/2014 laying down requirements and administrative procedures related to aerodromes pursuant to Regulation (EC) No 216/2008 of the European Parliament and of the Council.

[29] RGM du 7 janvier 2013 déterminant les modalités d´exécution du règlement grand-ducal du 12 mai 2012 portant publication et exécution de l´annexe 14, Volume I, à la Convention relative à l´Aviation Civile International.

[30] Airport User Committee

[31] ANA (2015), Consigne d´Exploitation de PTO – Procédures Techniques et Opérationnelles (Aérodrome). ANA: Luxembourg.

- Outils pour la gestion de la faune à l'aéroport (1) ;
- Fortbildung für Vogelbeauftragte (1) ;
- ATM Occurrence Reporting and Investigation Tools (1);
- EASA Basic Regulation (No. 216/2008) - A total system approach to European civil aviation (1);
- Airport operations in conjunction with construction work (1);
- EASA Implementing Rules for Aerodromes (1);
- ATM Occurrence Investigation and Analysis (2);
- Inspection des aires de mouvement (15).

ESSIP Performance

AER is also involved in a number of ESSIP objectives (Aerodrome Operator Part, APO) and responsible for certain stakeholder lines of actions (SLoAs) as listed below (for detailed descriptions see Luxembourg LSSIP (2015).

- **AOP03** – Prevention of RWY incursions – (lux-Airport) – late in implementing the ICAO RT phraseology and training for vehicle drivers;
- **AOP11** – Initial Airport Operations plan – ANA APO has planned to implement the airport part by 2021;
- **ENV01** – Implement CDO techniques for environmental improvements – ANA APO should provide monitoring and feedback reports to users (late) ;
- **INF07** – Electronic TOD – ANA APO shall plan and conduct the activities for the implementation of the TOD as required by the national TOD plan (late).
- **SAF11** – Prevention of RWY excursions – ANA APO to implement (with lux-Airport and the L-AST) all applicable actions from the EAPRE[32].

Strategic initiatives in AER

ANA AER had four strategic tasks for the 2015-16 reporting period (achievements in brackets):

- Continue the certification work (done, ongoing);
- Acting in accordance with the new RGD for ANA as the APO (the RGD project started in 2015 and issued in 2016 only; action is therefore delayed);
- Finalise cost allocation certification financing study for decision making by the MDDI (achieved; the study was finished in April 2016; details of the outcome are in the Finance Chapter of this document);
- Prepare a technical spec & tender for aerodrome certification project support (done, PMP and task breakdown are available; PM support in-house available).

[32] European Action Plan for the Prevention of RWY Excursions (EAPPRE), (Eurocontrol).

ELE - Electro – technical Service

The electro-technical service department (ELE) provides essential services to both, the ANS and the Aerodrome service areas of ANA and is responsible for a number of safety critical equipment.

To this effect ELE is supervised in accordance with applicable standards, processes and procedures.

The main task of the ELE service is to install, maintain (and improve) the electrical infrastructure of the aerodrome:

- **Airfield Ground Lighting** (AGL) system (Runway (RWY), Taxiway (TWY), Approach (APP), stop bars, signs);
- **primary aerodrome power** supply to all critical ANA infrastructure;
- **secondary power provision** in case of outage, failure or in case of contingency through Auxiliary power units and or secondary power supply.

ELE also maintains the integrity, validity and reliability of a geographical information system (*Système d´Information Géographique*, SIG) of the aerodrome infrastructure (e.g. maps of electrical and fibre optic cabling and wiring; infrastructure maps; geographical info and telephone system).

This information and data is an important input and enabler to the planning and installation of nearly all infrastructure projects as, for example the RWY and TWY refurbishment works, the A-SMGCS project, power supply projects and all construction and building projects.

ELE OPS (Operations) Manual is regularly updated. The last update (Version 2.2) was issued in Sept 2015[33]. The main changes concern:

- maintenance plan update;
- degraded mode of operation table detailing specific measures to be taken in case of failure of safety relevant equipment under the auspices of ELE.

ELE conducted in 2015 -16 a **Safety Survey** with airlines to identify tolerable number of unserviceable RWY centerline lights and to establish the according service level for RWY re-surfacing works (done by PCH) causing RWY light demolition and requiring repairs (see Figure 7)[34].

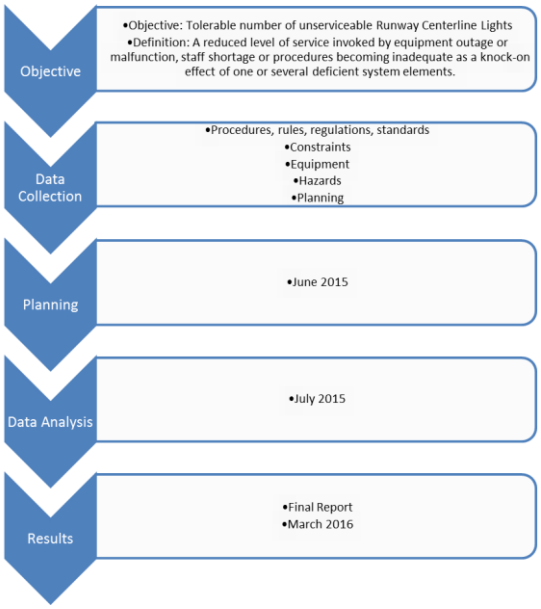


Figure 7 – ELE safety survey and report 2015-16

The outcome was (in a nutshell) that no RWY centerline lights should be unserviceable during the period of resurfacing the runway as the possibility of CAT II/III conditions is present.

The report also describes the changes of the working procedures during re-surfacing works in line with health and safety requirements, helped to reduce workload and reducing the number of unavailable RWY centreline lights.

Performance of safety critical equipment – KPI# 11

Aerodrome lighting (PI# 26): In 2015-16 some actions concerned the better integration of ELE into the AER Department and the development of better working procedures with PCH during re-surfacing works (see paragraph on Safety Survey above).

These actions were successfully implemented improving the working conditions and maintaining performance of the lighting system.

Table14 gives the results against set performance indicators (**PI# 26**) in KPI #11.

The figures show a high above target availability of lights: between 94 / 96% of the RWY centre lights of the AGL system are above standard in light intensity.

Good results (98%) are also achieved in the Touch Down Zone (TDZ) lights.

Specific training to operate the MALMS system was provided in 2015-16.

Availability of secondary power supply (APP lights) (PI# 27): This concerns the testing of the

[33] ANA ELECTROTECHNICAL DEPT. OPERATIONAL MANUAL, Version 2.2 (09/2015).

[34] ELE Safety Survey: Tolerable number of unserviceable Runway Centreline Lights. Version 0.3 (draft) (to be approved / released).

switch-over from the main to secondary power systems with target < 1 sec. It was internally agreed that the measurement of the switch-over time is performed once / 5 years.

Availability of secondary power supply for all lighting system (PI# 28): As above the measurement of the switch over time are done once / 5 years.

Power supply project status: ANA planned in 2013 the implementation of a dual (independent) power supply infrastructure and started:

- **Project `Main Power Station South`** - New power supply station with a second external source for electric power supply and a further Emergency Power Unit (Genset). The project is still ongoing but will be finished in autumn 2016.

Safety - ATM technical effects: The protection of the aerodrome / ATM system from effects or failures of safety critical electro-technical systems is the focus of regular and preventive maintenance and the 24hr service intervention.

The PI for the (technical) effects on ATM Services is the *´Maximal tolerable number of ELE direct contribution to severity classes AA – E`* incidents.

The results in class AA incidents (inability to provide ATM services) to class B (partial effected ATM service) show that none occurred.

In class C (degraded ATM service while still able to function fully) nine incidents happened and seven in class E 2015. Class E effects have no safety nor performance impacts.

PI# 30 - results of service intervention time average is 34 minutes during 2015 - well below target time and 15 minutes lower than in 2014.

Common PI# 1 – Training and Competence: The following training and competence upkeep exercises were organised and held with ELE staff (in brackets number of staff / days of training):

- Arbeiten unter Spannung (working under tension) (6/2);
- AGLPlus 3 Airfield Ground Lighting Maintenance Management (2/5);
- ALCMS Service Training (7/0,5);
- ALCMS Update and Refresher Training (7/0,5);
- Inspection of movement area (5/1);
- Schaltberechtigung 1 – 36 kV (5/2);
- Safety Assessment / Occurrence Reporting (1/15);
- Intro QMS/SMS/PM (3/0,5);
- ISO 9001/2015 (1/1,5);
- Airport Communication (2/0,5);
- Operational maintenance of LED lights (2/1,5);
- Transformer – station maintenance (1/2);
- Other (Management / leadership etc)(1/2).

ELE Strategic initiatives

The main strategic initiative objective for ELE in 2015 was to gain a closer involvement and influence in the RWY / TWY and other infrastructure work on the aerodrome. This objective has been achieved.

ELE is now strongly involved in the ongoing aerodrome certification project (see the AER Chapter for more details).

Other important strategic tasks and projects for 2015-16 (see also project list in the PMO Chapter):

- **Frangibility of the masts for RWY approach lights** in accordance with ICAO Annex 14.

  The project is ongoing but progress is still hampered by a dispute over access rights to deliver the replacement equipment to one of the required locations (ongoing legal case).
- **Implementation of new ALCMS:** The project was finalised.
- Participation and support to the **RWY refurbishment planning:** ELE participates and supports the RWY project.

Table 14 – Availability of ANA ELE services and safety critical equipment and other PI´s – results 2013-16

ELE SERVICE - KPI # 11 - Availability of Safety Critical Equipment 2015 / 2016						
KPI # 11	**ormity/reliability of safety critical CNS serv**	**2013**	**2014**	**2015**	**2016 (Q1)**	**Targets**
PI # 26	Availability of safety critical equipment - RWY AGL (Airfield Ground Lighting)	97% TDZ	1. Measure 96% RWY 24 89% RWY 06 2. Measure 80% RWY24 71% RWY06 91% TDZ	94% RWY 24 96% RWY 06 98% TDZ	None yet performed	Between 75 - 95%
PI # 27	Availability of safety critical equipment - secondary power supply	NA	1. Measure 2 sec 2. Measure < 1 sec	To be done all 5 yrs	To be done all 5 yrs	< 1sec
PI # 28	Availability of safety critical equipment - all lighting systems	NA	1. Measure 18 sec 2. Measure < 15 sec	To be done all 5 yrs	To be done all 5 yrs	< 15 sec
PI # 29	Maximum tolerable ATM SE incidents (AA)	0	0	0	0	0
Levels	Maximal tolerable ATM SE incidents (A)	0	0	0	0	0
	Maximal tolerable ATM SE incidents (B)	0	0	0	0	2
	Maximal tolerable ATM SE incidents (C)	13	4	9	0	10
	Maximal tolerable ATM SE incidents (E)	4	13	7	2	20
PI # 30	Average service response time	NA	49 min	34 min	21 min	< 2 hrs
Common PI´s		**2013**	**2014**	**2015**	**2016**	**Targets**
PI # 1	Maintain/ develop competence of ELE staff	Only plan established	Needs established; training started	Consense training module in test phase	AuS and MT high voltage switch training done in 03/2016	Training plan completed for all staff
PI # 2	Stakeholder consultation (internal stakeholders)	NA	MET/ELE SLA	CNS (maintenance proc.) AIS (data provider list)	NA	Maintain SLAs / provide support
PI # 3	Stakeholder consultation external stakeholders)	Stakeholder list for ANSP part	Revised stakeholder list	PCH SLA drafted	New contractor for high tension equpm. mainten.	Maintain SLAs / contracts

Notes: RWY06/24 AGL photometric measurement of lights with MALMS equipment.

The percentage figures for PI# 26 are the percentage of lamps that are 50% above standard (ICAO requirement; adopted by EASA in the frame of the EU 139/2014).

Although EASA does not specify the number of times the photometric properties of the lights are to be checked; photometric measures are done at ELE at least once per year.

Fire brigade and rescue service (SIS)

The main tasks of SIS are the

- intervention in case of aircraft incidents / accidents;
- support to people (i.e. first aid) in critical conditions, at air- and landside.

SIS is also tasked with

- interventions and reporting of cases of liquid spills (fuel and other liquids e.g. oil, chemicals; in some cases interventions are done in cooperation with external partners (SIA[35]) e.g. in cases of unknown or dangerous goods requiring special equipment and protection);
- interventions in accordance with the Dangerous Goods Regulations;
- participation in daily inspections of the RWY and the TWYs;
- collection of FOD and remains after bird strikes (in cooperation with AER) and compilation of the reports;
- wildlife / bird strike management (in cooperation with the wildlife management cell in AER).

During winter operations SIS - triggered by a MET report regarding weather conditions - performs regular friction tests on the manoeuvring area and reports results to ATC, AER, AIS and PCH.

A revised winter OPS procedure is now in place.

Main documentation

The main documents for SIS are:

- **PIA**[36]: The intervention plan (PIA) governs the procedures, tasks and conditions for SIS interventions at the airport. SIS released the document in 2013; in 2014 a revised and updated version followed. A final version is expected to come before the end of 2016.

It is pertinent, that a full **emergency plan** for the aerodrome is required and has to be developed in the frame of the certification work. This has started and shall be available in autumn 2016; see also Annex 3, WP 5.

- **PTO**: The *´Procédures Techniques et Opérationelles´* (PTO) summarise the other tasks in which SIS (and other services) are involved together with the other airport partners.

ANA revised this document and relevant parts are now included in the SIS operational manual. Further developments are expected as appropriate in the frame of the certification.

- **Winter OPS Process**: The functions and tasks of SIS and the interfaces and procedures during adverse weather conditions in winter in which SIS is involved are laid down in the Winter OPS document.[37]

SIS Activities

SIS provides the validated reports of the friction tests results to ATC, AER, AIS and PCH for their follow up and action as appropriate.

A new procedure on winter OPS including all concerned departments were elaborated and delivered.

In late 2015 SIS had invited a foreign rescue and fire-fighting organisation to perform a site visit, to exchange and to do a kind of ´audit´ in SIS. The results are helpful to devise actions to fall in line with the aerodrome regulation (see **PI 42** in Table 15.)

SIS KPI Performance results – KPI# 17

A revised version of the KPI / PI form was set up with SIS, finally agreed and signed giving clear targets.

- The corporation and coordination with AER partners in regard to FOD classification and reporting and friction testing is firmly described and laid down.
- AER adopted a classification scheme for FODs, including wildlife remains and reports on the basis of the collected FOD reports using the adopted common report format.
- SIS gathers all reports in a central register. The analysis of the reports and reporting to management is done by AER.

Fuel and other spill reports are handled by SIS; SIS did a full analysis and management report in 2015 and took actions in some cases of repeated spills with Luxfuel (see **PI# 44** in Table 15).

Table 15 provides an overview in the PI achievements for 2015 (full year).

SIS demonstrated its capability in keeping in line with the target set for intervention time, a major target also in regard to ICAO requirements.

SIS must and is planning to advance in the other PIs in line with the requirements laid down in EASA AMCs.

PI# 40 – Emergency response time: All teams performed the exercises with good results in 2015. In view of the EU 139/2014 and EASA AMC requirements SIS will revise the exercises. This work has started.

PI# 41 – Rescue and Fire-Fighting (RFF) competence: The requirements of the EU regulation 139/2014 and EASA are to be rolled out and SIS started to implement corrective actions

[35] Service d´incendie et d´ambulances de la ville (Luxembourg)(SIA)

[36] ANA SIS 2014, Plan d´intervention aéroportuaire. 2014

[37] ANA (2016), Winter operations process. (Revision document, last release March 2016).

concerning trainings and competences in a dedicated working group.

During 2015 a number of RFF personnel received further training. The competence base is building up and motivation of RFF staff to acquire and demonstrate increased skills are important enablers for the future.

PI# 42 – Service level coverage by RFF: Following the audit in autumn 2015 SIS started to investigate the service (security) level requirements and will step-by-step adjust competence and service schedule accordingly:

The service level requirements (i.e. aircraft category) for SIS operations are related to training needs of SIS personnel but also to the availability of trained personnel during shifts and in standby.

These, and related measures for a work schedule and operations have started in 2014 already with an initial review of the night curfew flight operations.

PI#43 / 44 – Stakeholder consultations: The stakeholder consultation on service needs, the investigations of the operating needs with airlines, as well as ICAO and EASA requirements has started with the support from the safety unit further analysis and planning. SIS contributed to the aerodrome manual under development.

These activities are ongoing.

Table 15 - SIS – Performance Assessment / Achievement 2014 – 2016 against KPI and local PI´s (KPI#16)

KPI # 17 Conformity / reliability of airport SIS safety critical services- Development & Status 2014 - 2016						
KPI	**Conformity / reliability of airport SIS safety critical services**	**Measure-ment Unit**	**2014**	**2015**	**2016**	**Target**
PI 40	Emergency response time (Equipe 1)	Min	17/01/2014 02:42	10/04/2015 03:20 16/11/2015 02:58		< 3 min
	Emergency response time (Equipe 2)	Min	03/03/2014 02:29	07/04/2015 02:43 21/10/2015 02:54		< 3 min
	Emergency response time (Equipe 3)	Min	01/07/2014 03:25 24/12/2014 02:45	08/04/2015 02:53 09/11/2015 02:25		< 3 min
	Emergency response time (Equipe 4)	Min	03/07/2014 02:19	09/04/2015 02:54 09/12/2015 02:55		< 3 min
PI 41	**Maintain and develop firefighting and rescue competence**		2014 status	2015 status	2016	SIS training plan completed for all staff (100%) and duty plan aligned with service security level and operational requirements (ensure that airport remains operational)
Action	Maintain personnel (´carnet personnel´) and training records stored in Consense (new Consense Training Modul) and in line with EASA requirements	%	Regular training according to current service scheme	The training and competence scheme is being reworked by a WG to meet the new certification requirements	Actions ongoing in the frame of Aerodrome certification	
Action	Ensure conformity of the SIS competence scheme and training plan with the agreed level of security and operational need and in line with EASA requirements	%	Regular training according to current service scheme	Training plan 2015 established and implemented	Actions ongoing in the frame of Aerdorome certification	
PI 42	**Provide adequate firefighting and rescue competences in line with operational requirements of the airport/users required at that time**					SIS duty plan shall be aligned with service security level and operational requirements
Action	Establish and agree level of security and operational need (CAT) with stakeholders / airport users		NA	Stakeholders list set up & evaluated in collaboration with SAF Unit	Ongoing	
Action	Review and align duty plan accordingly and as appropriate		NA	Ongoing – the duty plan adapted in a WG according to the C2 FPA audit results (autumn 2015)	Ongoing	
PI 43	**Maintain regular Internal Services Interfaces**		**2014**	**2015**	**2016**	All relevant interfaces identified, defined and coordinated with respective other units and integrated in the Aerodrome Manual
Action	SIS to provide relevant inputs to the Aerodrome Manual	Completed & accepted inputs	Started in late 2014	Done in collaboration with the Safety Unit	Ongoing	
PI 44	**Identification of common actions and resolution of problems and shortcomings together with other relevant parties: External Services Interface**					All actions defined, coordinated and resolved with external parties as appropriate
Action	SIS to define / record "Einsatzmängel" stated in "Einsatzbericht der Flughafenfeuerwehr" including actions taken together with external parties (i.e. LuxAirport, Luxair, Cargolux)	Completed & analysed reports	ICAO exercise performed; issues and observations recorded	List established and analysed, several corrective actions done as consequence – 2014 ICAO exercise issues have been tested, part exercise foreseen for 14/7/2016	Ongoing	
Action	SIS to maintain the central records of FOD and fuel spill reports SIS interventions (fire & technical interventions) including reports received from other parties and provide an analysis and concluding report to ANA Management (except for wildlife related FODs which is done by the wildlife service in AER)	Completed & analysed reports	FOD data compiled and ananlysed (with AER)	2015 FOD and Fuel Spill Reports available; actions derived from reports and implemented	Actions taken with Luxfuel	

Staff training & competence

In order to comply with the requirements of commission regulation (EU) 139/2014 in relation to trainings and competence of SIS, many efforts have been made during the reporting period.

Following the results of an audit carried out at the end of 2015, a working group dedicated to the "trainings" theme has been created, with the objective to identify, prioritize and implement the corrective actions suggested by the auditor.

The main actions concern the definition of a training program for SIS agents and the designation of internal trainers and assessors.

This work involves many resources and it will extend until next year.

To upkeep the skills and competence

- training of SIS staff in accordance with the firefighting and rescue training plan; and
- exercises of the staff under various conditions of firefighting and rescue

were held to ensure the proper functioning of the service.

SIS Strategic initiatives

The Annual Plan 2015-16 states three next step items in regard to the strategic initiatives for SIS:

- Participation in discussions / planning of the national rescue service re-organisation / integration. **Status**: **Ongoing** – SIS is following the developments.
- Preparation and contribution to the aerodrome certification work. **Status**: **Ongoing**).
- Training and competence development of RFF staff. **Status**: **Ongoing** – a dedicated WG on competence development is working on the subject.

5. PROJECT MANAGEMENT IN OPERATIONS & INFRASTRUCTURE

Project Management (PM)

The Programme Management Office (PMO), established in 2012, continued and advanced in 2015 – 2016 with the implementation of further PM tools and procedures, regular internal project reviews as well as direct and indirect project support to all departments.

The current project portfolio of the PMO includes both, ATM and Aerodrome related projects.

General overview PMO issues

The managing of the portfolio of projects and the insurance of progress according to schedule, budget and resources is a normal PM task but still not easily achieved.

Substantial delays in finishing projects (and cost / budget overruns or overestimations) are still observed. Some important factors continue to be of concern throughout the lifecycle of projects:

- Pending authoritative decision and/or regulatory support in projects that require policies and institutional decision or regulatory guidance and support;
- delays in the start of the tendering process due to pending decisions;
- delays in required external civil engineering works and studies;
- long transition periods with extended testing / shadow mode operations / continuation of non- compliance with technical requirements;
- time needed for a correct and complete identification and establishment of technical requirements;
- delay in safety work.
- legacy projects not developed and planned according to current ANA PM standards.

The importance of the last three items has decreased lately. However, the first four items continue to be of major concern.

ANA is escalating these items and has spent substantial efforts in bringing problems in projects and the projects itself to the decision table at all levels. This has helped the progress and all parties and partners have advanced their efforts, too. The efforts to improve are well spent: reducing delays in projects reduces costs and efforts.

The **efforts and resources** that need to be spent to keep projects afloat cannot be overestimated even in cases of implementation of COTS[38] products.

ANA has seen resets after continuous bugs and system mal-performance in instances where they were not expected.

Close coordination between all involved partners, regular and honest feedback and an attitude and positive culture that supports the finding of solutions are key for success in common projects. These principles and culture must be honoured by all sides.

Another issue is **improving competence**: PMO is providing its service to project leaders and teams and provides feedback, raises alerts and monitors and controls projects along the way to keep projects afloat and finding solutions for problems in a partnership approach.

ANA PMO is also investing efforts in providing **PM tools** and **training** for those that have been appointed to lead or work in projects.

The safety case work in projects – especially when Interoperability (IOP) and Software Safety Assurance (SSAS) are involved – requires specific competence in the project teams. This competence is acquired step-by-step with support from external experts and is now available in the departments and project teams where it belongs:

- The safety work and competence to be performed by the project teams and overseen and supported by the safety unit must be commensurate to the project requirements. This is also to be ensured at supplier level and, last but not least, at NSA level.

The project tools available will in near future also cater for and provide a framework for the safety work (SSAS, safety assessment).

Project competence improvement and training will continue.

In May 2016 PMO started to introduce **Project Risk Management** procedures and tools (i.e. risk assessment; root cause analysis; risk management / mitigation etc.).

Program and PM process improvements

Project launch & approval: Project leaders are required to fill the Project Change Request Template (PCRT) before the SMT decides on the project. The format and content of the PCRT was further improved and includes additional information on resourcing, safety work to be performed etc. Security is a most recent additional field on the PCRT to be assessed.

The aim is clearly to be as precise and complete as possible in the requirements, the resource needed and all performance indicators to be observed. Risk management will soon be included.

Project documentation: The backbone system and support tool for all project leaders and workers is PMTalk.

[38] Commercial Off The Shelf

The tool is accessible for regular updates and upload of documents. Project status has to be flagged (e.g. delay is flagged red) that issues can be resolved and or escalated to the next level for resolution as soon as it is possible and tracking of the item is enabled.

Through regular so called ´Project Cockpit Reviews´ at project leaders meeting (quarterly) and in the **SMT** (monthly) all ongoing projects are discussed and the status confirmed. This practice has helped to identify problems earlier, find common solutions and derive actions to advance. Backlogs in projects are made open; reasons and solutions are discussed openly.

In late 2015 **SSAS** documentation was made part of the Project Life Cycle (PLC) and PCRT. Further advancements and supporting tools are close to be implemented (e.g. SSAS configuration management; risk management).

Project resource planning and execution: The correct estimation of the likely financial (and other) resources is important to achieve project cost effectiveness and cost efficiency.

It was observed that the actual FTE needed for projects are often much higher than planned – mainly due to the reasons listed above. A clear sign that ANA can save costs and resources if project processes were improved and actual efforts spent is now made visible to all parties.

Project cost tracking measures: The PCRT was updated accordingly in 2015 requesting project leaders to estimate project costs on the two budget lines:

- Investment costs (INV);
- Operational costs (OPC).

Guidance is provided online using the correct *´assiette de redevances´* codes.

These measures are closely coordinated with the Financial (FIN) department and require changes to the tools employed and tasks to be performed in the department.

Project procedures improvements:

- Quarterly meetings of project leaders are held to improve PM processes and procedures, prioritise projects and resource allocation.
- PMTalk to host further tools and procedures in support to processes.
- Introduction of PIs into the ANA Performance Plan.
- Security compliance measures are implemented also in PMTalk.

During the second half of 2016 PMO will implement:

- Risk management methodology related to project management.
- Enhanced tool to track project efforts (man-hours).

PMO achievements in KPI# 20

The PMO adopted, after the 2015 KPI review session, measures to track the performance of project management and execution in terms of two important PIs:

1. The finalisation of planned projects according to plan (**PI# 62**) and
2. Project expenditure according to planned project budget (finance) (**PI# 63**).

Project finalisation 2015

The progress in PM is tangible and substantial despite the challenges described. **PI# 62** measures the achievement in the first performance area:

The year 2015 saw an important number of finished projects (some of them rolled over from past years) – both in total numbers and relative to the number of projects aimed to be finished (see Table 16 below and Table 17 overleaf).

Table 16 – Progress in project finalisation trend 2012 – 2015 (**PI# 62**)

	2012	2013	2014	2015
Closed	1	9	13	22
Planned	3	10	18	26
RAG				
%	33%	90%	72%	85%

In 2015 a total of 22 projects could be finalised out of 26 projects planned to be finalised. This is a steep increase and amounts to an average of nearly two projects per month.

Project finance planning & execution

Since late 2014 ANA support in the purchasing process is available and is employed in helping departments and project members in establishing a proper tendering, purchasing and tracking methodology. This has had substantial and positive impacts on the projects outturn (e.g. savings made; re-negotiation of existing contracts and contract controls).

As reported before, PMO implemented means and tools also in the PMTalk and in the finance department to track the performance in project budget execution against the plan.

The first consolidated project budget / expenses table was established for the first half of 2015 but

still required a lot of manual work in the finance department to collect and compile the figures.

During the second half of 2015 and continuing into 2016 the process to retrieve the data and to compile results has much improved. The goal is to have tools and procedures in place to provide financial information on projects (and in fact on all expenses) on ´the click of a button´:

- Available budget, budget spent (expenses);
- running purchase orders / invoices;
- remaining funds etc.

at the hand of project leaders, PMO and the finance department.

The first results from a late 2014 and throughout 2015 performed check of **PI# 63** give a good first impression of the areas for improvement (see Table 17):

From a total of 19 projects since September 2014 with a total budget planned of 1.18 M€ a final sum of 0.86 M€ (27% less) was actually spent.

This result and the further analysis of the data allow first conclusions to be drawn:

- A tendency to overestimate the required financial resources;
- The effect of savings in projects.

PMO is now able to monitor the initial project budget estimation against actual amounts spent in order to establish a reasonable target on the PI in the future.

It is expected that ANA will soon be able to close the gap between planned budget and budget expenditures: to plan and spend a more realistic amount of investment funds in projects.

Table 17 – Project Management - KPI achievements against established PIs 2014 – 2015 (full years)

PMO SERVICE - KPI # 20 - Maintain quality and efficiency of Project Management - Achievement 2014 - 2015				
KPI 20	**Maintain quality and efficiency of Project Management**	**2014**	**2015**	**Target**
PI 62	Maintain integrity of ANA project management procedures & processes: - Number of projects finished / planned to finish	13 projects out of 18 planned finished (72%)	22 projects out of 26 planned finished (85%)	No target set
PI 63	Effectiveness of project costs to project budget: - Actual project costst / planned project costs per annum (finished projects)	Development of approach for Actions 4 & 5	Actual costs were 27% lower as planned	No target set
	Common PI´s			
PI 1	Maintain and develop competence of staff in PM Action: Implementation of PM training plan for project leaders and teams	Planning of courses	Training of Modules 1-3 finalised	100%
PI 2	Maintain regular consultation and exchange with ANA internal stakeholders / customers Action: Hold quarterly project leader meetings	3 meetings held	3 meetings held	100%
PI 3	Maintain regular consultation and exchange with ANA external stakeholders / customers Action: Attend / report at formal Airport User Committee (AUC) meetings	Achieved	Done - full presentation of planned projects to AUC in autumn 2015	100%

PM competence & training

The program for PM training of project leaders and teams was developed, communicated and agreed on. Three modules for planned PM training (Part 1) were provided in 2015-16:

- Module 1: (for beginners) – basic PM at ANA;
- Module 2: (intermediate level) – training in the use of PM tools in ANA (PMTalk);
- Module 3: (advanced level) – for experienced project leaders managing major projects, (external training).

In Q2/2016 PMO has started with a Project Risk Management training Workshop and course (internal) to work out a scheme and method for project risk management.

ANA - Project overview and status

Table 18 gives an overview on the Status of finalised projects, ongoing projects, as well as projects that are on hold or have been cancelled (both, ANSP and APO related[39]).

[39] For details on the ANSP and APO projects see the respective chapters in this document.

Note: The status of projects in the table lists only major projects that started or were finished in 2015 up to and including projects that finished until the end of June 2016.

In total 26 projects are ongoing (with a project # and respective project documentation (24 on 2014-15 Report).

FABEC projects: It is to be noted that the airspace project SWAP in which ANA participates is currently on hold. The CDO project is delayed (see previous chapters for more details).

SESAR ATM MP Projects: The table lists A-SMGCS and SUR chain IOP as the main active ATM MP projects.

ANA follows SESAR Deployment Programme (SDM) developments closely through PMO and in CNS and reports on the status of developments in ANA to the respective SESAR Focal Points in FGABEC.

Most SDM projects in the SDM 2016 document[40] are not applicable to ANA besides SWIM network related items.

Network infrastructure (FABEC / EU): The relevant measures as regards network infrastructure are either in place or will be decided at a strategic level (e.g. SYNergie Project).

The Common Network Group (CNG) in which ANA (CNS) participates and the participation at senior management and CNS level in the NewPENS[41] acquisition project ensures strategic input and coordinated decision making on some medium to long-term projects that are and remain to be essential for ANA.

[40] SESAR Deployment Programme (2016), Initial draft. Brussels: DM.

[41] NewPENS = New Pan-European Network Services is a procurement project at the time being managed by Eurocontrol and concerns the replacement of the current PENS.

Table 18 - Projects finished / ongoing / on hold in the period 01 July 2015 – June 2016

Project Status Category[42]	Project Name	Service	Project Status	End date	Scope	Reference to EU / ESSIP / ICAO / PI
# 025	**RVR Sensor** (RWY Visual Range)	MET	Deployment	Implemented 2015	SES ICAO	ICAO requirement (EU 139/2014) Replacement Other sensors also required by SAFETY
# 063	**IOP Gateway**	CNS	Deployment	2016	SES (IOP) (ASMGCS)	EC 1207/2011 (IOP) Ensure interoperability between systems (ASMGCS / SUR)
# 022	**AWOS / ATIS** – Automatic Weather Observation System	MET	Entered operational service October 2015	Operational end 2015	ICAO	ICAO Annex 14 COST EFFICIENCY
# 126	**Restructuring of MeteoLux Internet Portal**	MET	Implemented	2015	ICAO / Public MET	Provision of MET information for aeronautical / non – aeronautical users
# 123	**ALCMS upgrade** (RWY/TWY lighting system)	ELE	Operational	2016	SES ICAO	Upgrade of lighting system COST EFFICIENCY
# 149	**Backup Telephone System (company: UNIFY)**	ELE	Operational	2015	ANA intern	Replacement of old Siemens system
# 134	**TWR COM contingency phase 1**	ATC	Implemented	2015	SES	EC 1035/2010 Annex 2 – Contingency plan
# 001	**PMTalk** – Project Management Support Tool - Extension	PMO	Implemented	2015	ANA	Extension of current PMTalk for financial tracking COST EFFICIENCY
Not listed as project	**SSAS** – SW Safety Assurance System	CNS	Implemented Approved by DAC	2016	SES	EC 482/2008 (SSAS) SAFETY
# 009	**A-SMGCS** – Advanced Surface Movement & Ground Control System	ATC / CNS	Implementation ongoing	2016 Phase I	SESAR **ATM MP**	AOP04.1 / 04.2 / ATM MP SAFETY
# 069	**Fibre optic and copper cable distribution**	ELE / ATC	Definition	2016	NA	Related to A-SMGCS – establishment of connectivity
# 137	**Aerodrome Certification**	AER	Study / definition / implementation	2017	SES EASA	EU Re 139/2014 (EASA) Requirement
# 065	**Direction Finder (DF)**	CNS	Started	2017	SES	Replacement of old system
# 068	**SDDS** – SUR Data Distribution System	CNS	Deployment (delayed network connectivity)	2017	SURNET / SES	SURNET agreement / SAFETY (Contingency) EC 1207/2011 (IOP)
# 112	**RWY / TWY refurbishment**	AER	Definition / Planning / Negotiation (pending State decision, PCH)	2017 / 2019 / 2020	Aerodrome ANA	Airport continuity of service; planning and negotiation ongoing
# 013	**E-TEC** new Server Building	CNS	Planning Implementation started	2017	SES	CNS Contingency / Redundancy (SAFETY) Enabling implementation of other projects
# 078	**eTOD** – electronic Obstacle & Terrain Data - Photogrammetry	AIS	Definition Policy Decision by THE MDDI delayed	2017	SES	EC 73/2010 (ADQ) / AIP BE LUX Core data enabling implementation projects SAFETY / ENVIRONMENT

[42] Only major projects listed; green = finalised; magenta = ongoing; yellow = on hold

Table 18 (continued)

Project Status Category	Project Name	Service	Project Status	End date	Scope	Reference to EU / ESSIP / ICAO / PI Reference KPI / KPA
# 075	**Replacement wind sensors**	MET	Deployment; HW update pending - delayed	2016	SES ICAO	EU 139/2014 Replacement of current system SAFETY
# 083	**ELLX APP Control CDO** – Continuous Descent Operation **delayed**	ATC	Obstacle data received validation design pending Belgocontrol	2016	SES / **FABEC**	EU 390/2014 (performance) FABEC Performance Plan (FPP) PI (ATC) : Implement CDO ENVIRONMENT
# 079	**Camera for monitoring of meteo (MET) observation**	MET	Definition	2016	NA	Connected with AWOS QUALITY (weather observation)
# 046	**ATIS – Emergency Message**	MET/ ATC	Implementation	2016	SES	Contingency procedure ´Clear the sky' related SAFETY
# 089 & 055	**Main Power Station SUD**	ELE	Implementation started	2017	NA	Continuity of service - Power supply/ redundancy
# 120	**Electro-tech stations at Gates 06 / 18 / 24**	ELE	Definition (pending decisions, PCH)	2016	SES ICAO	Continuity of service PWR supply
# 118	**Electric distribution Glidepath RWY 24**	ELE	Definition (pending buildg. decision, PCH)	2017	SES ICAO	EU Reg 139/2014 SAFETY
# 140	***New*** **Spare parts management program**	ADM / all ANA Dpts	Definition	2016	NA	Service continuity / availability management of spare parts
# 146	**ANA Security Concept**	IMS	Definition / concept developed	2016	SES	New regulation SECURITY
# 147	**PANS OPS Software**	AIS	Definition	2016	SES ICAO	EU 139/2014 (ICAO) – Certification SAFETY
# 156	***New*** **CliSys servers renewal (Climate system)**	MET	Definition Implementation	2016	NA	Replacement of old system
# 157	***New*** **Replacement of the Radio Backup System (RESQ)**	CNS / ATC	Definition	2016	SES	Continuity of service / redundancy SAFETY
# 158	***New*** **AWOS/ATIS Test-bed**	CNS / MET	Definition	2016	Related to Project # 022	Installation of a test bed for AWOS Service continuity SAFETY
# 159	***New*** **AWOS / ATIS Software upgrade**	CNS / MET	Implementation	2016	Related to Project # 022	Service continuity SAFETY
# 161	**Recouvrement sol et murs du local technique et opérationnel de l'ATC**	CNS/ATC	Study	2016	Internal	Maintenance of OPS builidng
# 162	**Création d'une FATO** Mise en place d'une procédure avec stand de stationnement et trajectoires de départ et d'arrivée	ATC	Study	2016	ICAO	AER certification related

Project Status Category	Project Name	Service	Project Status	End date	Scope	Reference to EU / ESSIP / ICAO / PI Reference KPI / KPA
# 163	**Implementation of "HuD-Invent" software** SIS department to improve the management of the essential regular maintenance and function of the firefighting equipment.	SIS	Study	2016	Internal	Improvement in time schedule for different operations using fire fighting equipment to guarantee better ready to use condition. The system also manages the human resources available on each shift.
#165	**Digital ATC Briefing System**	ATC	Study	2017	Internal	Easing access to operational documents (e.g. MATS, AIP, PIA…), daily briefing (NOTAM, weather report, planned maintenance etc.), ATC search tools (e.g. ICAO 4-letter codes), emergency checklists, Consense, Outlook mail, meteorological information, reports, contacts and calendar.
#103	**Modernisation Bureau MET**	MET	Study	2017	Internal	Current office equipment installed in the observation room needs to be replaced. The console is not practicable and up to date anymore as working conditions in the office have been changed by sharing the observation office with the climatology division.

Project Status Category	Project Name	Service	Project Status	End date	Scope	Reference to EU / ESSIP / ICAO / PI Reference KPI / KPA
Not listed as project	**Safety assessment of current SUR system**	CNS	Delivered to DAC Approval pending	2016	SES	EC 1207/2011 (IOP) Performance and interoperability of SUR systems SAFETY
Not listed as project	**SUR Chain upgrade delayed**	CNS	Definition (Pending decision on SYNergie Proj.)	2016	SES	EC 1207/2011 (IOP) CNS STRATEGY related Service continuity
# 0024	**Replacement MET garden**	MET	On hold	TBD	ICAO	Project is related to AWOS / ATIS project
# 0023	**D-ATIS**	CNS / ATC	On hold	TBD	Internal ANA	Project is related to AWOS / ATIS project
# 0054	**Full integrated briefing** AIS MET **(delayed)**	AIS / MET	On hold / pending decision	2016	SESAR ATM MP	INF04 / ATM MP (alternative solutions investigated; sites identified, final decision and budget tbd) The project will most probably be re-launched in late 2016.
# 129	**CNS & MET Network architecture**	CNS / MET	On hold	2016	SES	Replacement - increase reliability, redundancy, IOP
# 110	**Support structures implementation of frangible masts APP 06**	ELE	Study	# 110	Support structures implement ation of frangible masts APP 06	ELE
# 136	**ATM architecture virtualisation**	CNS	On hold Pending decision on SYNergie projects	TBD	SES	EC 1207/2011 (IOP)CNS Contingency / Redundancy /Replacement (SAFETY)
# 130	**MUAC fall-back display**	CNS / ATC	On hold – pending decision on SYNergie Project	2016	SES	EC 1035/2010 Annex 2 – Contingency solution TWR
# 147	**PANS OPS Software**	AIS	On hold (pending Etod)	2016	SES ICAO	EU 139/2014 (ICAO) – Certification SAFETY
# 155	**ETET** SID (Standard Instrument Departure Route) to connect ELLX RWY24/RWY06 to the new route structure of the FABEC airspace design project "South East".	ATC	On hold	2016	SES	FABEC AD Project (SWAP concept)
# 132	**Pre-flight Check area building project**	Lux-Airport / AER		2016	ICAO	Implementation of a pre-flight check area on Apron 5

Note: The table lists the major projects, most of which were published in the Annual Plan (see: ANA, 2015, *ANA Annual Plan 2015-16.* Luxembourg, ANA); some new projects approved during 2015-2016 that were added are indicated as ***New***.

The total investment volume of all projects finalised and ongoing (except the AER RWY Refurbishment project) is about 12 M€.

6. QUALITY MANAGEMENT

QM activities and results

ANA Quality Management Service (QMS) is responsible for the development, maintenance and revision of the internal Quality Management (QM) structures, procedures and processes in all services and at all levels. This includes:

- *Facilitation of internal communication* - coordination between safety, quality, PMO, security and training and related processes.
- *Organising management review meetings* - annually reporting and review of all internal management processes.
- *Organising KPI review meetings* - annually reporting and review of all departmental KPIs, PIs and performance targets and associated actions and setting new / revising existing performance indicators.
- *Organising internal audits in different services* – providing support to quality improvements and feedback on achievements and processes / procedures.
- *Preparation of external audit* (EASA, DAC) meetings as scheduled – follow up, organisation of corrective actions and coordination with DAC.
- *Preparation and follow up actions of ISO 9001* audits.
- *Organising internal quality management processes* - meetings with quality officers for quality improvements, corrective actions and follow up after audits.
- *Supporting organisational structure* - detailing of job responsibilities, training, security and safety questions for assigned officials.

External audits 2015-16

During the reporting period 2015-16 a total of seven external audits were held in which QM was involved. Overall the results were positive:

- One ISO 9001 (version 2008) annual follow up audit by BSI[43] was passed without NCs and only two observations (certificate renewed). The 2017 ISO audit will be a re-certification audit based on a new 9002 version.
- Five NSA (DAC) follow up audits on various subjects were held during 2015-16.
- One NSA (DAC) initial audit on Security was held in 2016. The outcome was one NC and some observations.

The process for the management of external audits is defined in the IMS manual.

Internal audits

The team of internal auditors is conducting the internal audits; the list of senior and junior auditors was published internally. A definition of a focal point in ANA for the audits was drafted.

New procedures for internal audits were drafted and published. A so called “Dashboard” to monitor NCs and Observations was developed to track audit results.

Audits are planned and scheduled on an annual basis. In 2015 eight internal audits were held in different departments and services. A total of 26 findings emerged from the audits whilst 20 findings could be closed as resolved.

Processes and procedures

Clear definitions of the internal processes in place in ANA are documented in the IMS manual.

The internal processes, procedures and structures are either created or revised and integrated into the Integrated Management System (IMS) and documented annually.

The core management team convenes at least once per month. The former Lead IMS meetings are replaced by a new meeting format, **Comex** convened by the Director of ANA with the members of the core management team. Comex is charged with the following tasks:

- define, review and implement the ANA strategy, as well as validate the business plan, annual plans and annual reports ;
- ensure the proper use of financial resources and follow up on financial results;
- ensure the proper use of human resources, follow up on planned recruitments, allocation of posts and personnel training plans ;
- define, review and validate the organisational structure;
- ensure the proper follow up on management and operations ;
- define and control the realisation of strategic objectives;
- define policies on national and international relations and share related information;
- provide advice and recommendations on all projects or measures;
- establish policies and action priorities with the goal to promote the administration (ANA) as a sustainable and future-oriented centre of competence (expertise) in the frame of the public services statute.

Records of meetings are kept and actions are followed up on.

[43] British Standards Institution (BSI)

Performance reviews & management measures

In October 2015 and in April 2016 full day meetings were held during which departments / services were called to report on their performance against performance indicators (PIs), targets and specific actions taken in the past 6 months.

A detailed outlook to the next 6-month period was also given and proposals were made for revisions, updates or new PIs to adapt better to strategic business objectives and new demands. Targets were discussed and new targets developed in the second meeting.

This process also provides the inputs for the annual reports and the annual plan and has proven to be effective.

Departmental KPI management: Following the spring KPI review meeting the changes agreed to are transposed into the individual KPI / PI templates, with reference to updates regarding applicable legislation, internal and external documents and responsible people. In a final step the KPI sheets are signed by the KPI owners

ANA runs a total of 20 KPIs covering all departments and services (not just certified services) and about 60 PIs.

The performance management processes are an important tool at this stage of the organisational and internal culture change process in ANA.

The performance results achieved during the last four years are a clear indicator for the big steps that ANA as an organisation, as a business partner and as a service provider has made in all areas.

Strategic KPI – KPA mapping

ANA QMS also keeps an eye on the strategic objectives in performance management. Departmental KPIs also aim to achieve the wider (general) Key Performance Areas (KPAs).

Table 20 (next page) presents this mapping of KPI results against KPAs and the progress achieved / gaps remaining from this strategic performance perspective.

Management reviews

Connected to the KPI review meetings management review meetings were held with the CEO present and including all management staff.

The goal of the management review is to check the performance of the Quality Management System (QMS) and to review the main managerial processes. Actions for improvement are established.

Results in QM 2015-16 – KPI# 18

One QM performance indicator concerns the compilation, consolidation, follow up and reporting of customer complaints and other reports.

Table 19 provides the situation for 2014

Table 19 – KPI results / achievements 2015-16

QUAL SERVICE - KPI # 18 - Maintain Quality Management System - Achievement 2015					
KPI 18	**Total ANA customer complaints**	**2013**	**2014**	**2015**	**Target**
PI 47	External occurrences / safety reports	72	67	68	No targets set - all Pis for monitoring
	Laser attacks		7	10	
	Birdstrikes / suspected birdstrikes		36	30	
	TCAS warnings		3	3	
	Others		21	25	
PI NN	**Internal audits**		12	8	14
PI NN	**External audits**		2	0	No target set
	# of findings (NCs/OBS)	17	3	16	No target set
	Closed findings	NA	18	9	No target set
	Open findings		6 NCs/9 OBS	13	12 CA implemented

The results for **PI# 47** indicate that a stable situation has been reached. The number of reports received is nearly the same in all categories as in 2014.

It is noted that the number of laser attacks is slightly going up. It is clear that the actual number of attacks is substantially higher as most attacks will not be reported.

Table 20 – Mapping of main actions and results in departmental KPIs / PIs against Key Performance Areas (KPAs), corrective actions and performance gaps

Key Performance Area (KPA)	EU wide / FABEC / ANA KPI / PI and targets	ANA 2015-16 specific actions planned (PI / Actions)	Performance achievement 2015-16	Corrective actions proposed	Gaps closed during the reporting period?
SAFETY	**SES-PI 1**: Effectiveness of SMS (EoSMS) Target: FABEC - Reach level 3 in all items	ANA to continue improving the safety situation in 2014-15 inside ANA by: P 1. Verify & document redundant capabilities for primary systems availability during emergency / contingency; develop /distribute…emergency/cont. procedures; coordinate cont. plan of interfaced org. P 2. Safety data & SMS best practices sharing P 3. Structured approach to operational safety and SMS	Ad #1: Partly achieved. Ad # 2: Completed Ad # 3: L-AST established with clear mandate and TORs; IntACT participation granted	Work on contingency / redundancy of systems and procedures needs to continue. Closer partnership and coordination with airport partners is achieved and enables resolving airport safety issues. SAF Plan – finalise late or pending actions Development of some SAF policies ongoing	The SAF system has worked well and most actions were closed. Safety policy and objectives are still ongoing. **Ongoing** work on SAF Plan to close open actions.
SAFETY	**SES-PI 2**: Apply severity classification ANA Target: Apply severity classification to all SMIs and RIs and ATM -SEs	P 4. Classification of severity of ATM occurrences	Actions 1 – 4 achieved Incidents rated except for class E events	None identified	Yes This is an **ongoing** activity
SAFETY	**SES-PI 3**: Reporting of Just Culture Target: No FABEC target ANA target: 20 Items YES	P 5. Improve Just Culture.	Action 1: Statistical feedback via public annual report (2015) Action 2: JC policy – define JC qualification and training requirements for safety investigators	**State regulator and justice system adaptation in accordance with Just Culture recommendations are not in the power of ANA.**	Target achieved **Gap is not fully closed** State (juridical system) actions are still required
SAFETY	**SES** – Implement Contingency measures	The remaining action was the NSA audit of installed fall-back facilities in ANA (ATC, AIS)	Audit successfully performed (CLOSED)	None	Non-Conformity regarding EC 1035/2011 requirements on availability of contingency plan **CLOSED**.

Key Performance Area (KPA)	EU wide / FABEC / ANA KPI / PI and targets	ANA 2015-16 specific actions planned	Performance achievement 2015-16	Corrective actions proposed	Gaps closed during the reporting period?
SAFETY	SES – Requirement on Software Safety Assurance System (SSAS) EC Regulation 482/2008	SSAS OSM and Practitioners Guide to be developed Present to DAC DAC audit	Documentation delivered Audit performed with some observations and a NC (see last column)	CAP developed	CAP opened: Align SSAS OSM directly to EC 482 Align the content of P-SMS-CHANGE with ANA SSAS Practitioner guidance document Insert an additional diagram in P-SMS-CHANGE making the link between SSAS activities and the change management flowchart
SAFETY	ANA PIs: CNS maximal tolerable yearly number of CNS technical incidents	Replace obsolete equipment in time. P 11. Monitor availability of safety critical equipment (twice /year) TAR 2 stability and reliability of functioning to be maintained until end 2017	AWOS / ATIS system implemented and finally put into operation in 2015/16 All safety critical equipment in CNS is monitored twice / year and reported. No incident > Class D Maintenance contract TAR2 activity	Supplier action / contract measures taken.	AWOS/ATIS actions closed TAR2
SAFETY	ANA PI : ATC – ATM ground contribution to incidents ANA Target: A1/B2/C12/E24	P 6. Monitor ATM ground contribution to incidents	Targets fully achieved; further decrease in incidents	None	Yes Regular monitoring and reporting continues
ENVIRONMENT	SES PI (2): ATC - Establish CDO procedures at ELLX.	P 10. ANA to implement one additional CDO procedure.	CDO procedures developed but could not be finished in 2015 due to non-availability of TOD. Belgocontrol as the design authority for air-routes to be asked to develop/design the procedures Implementation	Acquire specific Terrain and Obstacle Data as per project (CDO, SWAP – SID/SATAR) and for aerodrome Area 2 through other means (ongoing). Design the procedures (Belgocontrol)	TOD for airport and planned routes available (closed) Belgocontrol approached, next steps to be agreed Still open.

Key Performance Area (KPA)	EU wide / FABEC / ANA KPI / PI and targets	ANA 2015-16 specific actions planned	Performance achievement 2015-16	Corrective actions proposed	Gaps closed during the reporting period?
COST EFFICIENCY	**SES PI**: En-route **and terminal** costs	P 41. Cost reduction in ER and TNC (2%/annum) P 42. Cost reduction in TNC (2%/annum). As a first step a complete stock taking and revision exercise was started in 2015 and continued in 2016. TNC modulation formula to be checked and reported as required by EU 391/2013. Re-calculation of TNC 2015 and calculation of the planned unit rate for TNC 2017.	Actual vs. determined costs for ER and TNC identified (2015 CEF monitoring performed). Revision and corrective actions taken in finance processes in COM and SUB, including correct allocation of costs. ANA has started in autumn 2015 with a complete overhaul and revision of the finance processes, procedures and tools. Report of (eternal) financial advisers is available and was issued to the MDDI. FIN delivered the Regulation 391/2013 the monitoring report results and actual cost breakdown to DAC. FIN provided a full report on financial breakdown of planned vs actual costs for TNC provision and the functioning modulation mechanism. Unit Rate 2017 calculated.	Cost allocation to be improved for SUB/COM and for the correct, transparent and complete cost and revenue tracking. Financial tools to be improved (SAP) or installed. Further financial issues to be clarified are identified. Actual costs are higher than determined (planned) costs (ER and TNC) – need to reduce costs.	**No – still ongoing** New KPI / PIs to be defined for the ER and TNC / COM part cost overshoot not yet resolved.
COST EFFICIENCY	**ANA / State PI:** Aerodrome cost reduction	P 43. Cost reduction aerodrome (1,5%/annum) As a first step, a complete stock taking and revision exercise was started in 2015 (still ongoing) The aim is to identify correctly, completely and transparently all costs related to aerodrome activities and infrastructure	Revision and corrective actions taken in finance processes in COM and SUB including correct allocation of costs. ANA has started in autumn 2015 with a complete overhaul and revision of the finance processes, procedures and tools.	Cost allocation to be improved for SUB/COM and for the correct, transparent and complete cost and revenue tracking. Financial tools to be improved (SAP) or installed. Further financial issues to be clarified are identified.	**No – still ongoing** Pending decision on AER financing – no possibility to cut costs in a situation of no dedicated AER budget for the certification work. New KPI/PI to be defined for this part based on a resolved AER budget for the certification.

Key Performance Area (KPA)	EU wide / FABEC / ANA KPI / PI and targets	ANA 2015-16 specific actions planned	Performance achievement 2015-16	Corrective actions proposed	Gaps closed during the reporting period?
COST EFFICIENCY	**ANA PI:** Align investment and operations costs with budget available (no target defined) in all projects	P 63. Ensure effectiveness of project costs to project budget	Actual project costs / planned budget per project / annum is tracked Actual project expenditure / planned expenditure per project / annum is tracked Installation of financial tools and procedures to facilitate continuous and technically advanced tracking and accounting.	Integration and new installations of tools and procedures are still ongoing.	**No – still ongoing** Partly depending on the outcome of the SYNergie decision: if higher investments in ATM infrastructure is required the pressure to control and contain project costs increases.
QUALITY	**ANA PI: QM -** Quality management monitoring of compliance / adequacy of procedures for safe and efficient operational practices	P 47. Ensure the overall integrity of all reporting exercises in ANA related to QMS	Monitoring and follow up of external occurrences is done and coordinated between partners and addressed during internal QM meetings. Internal audits and external audits are performed regularly	Continuous activity	No immediate gap existing; the continuation of all quality management actions to improve processes and procedures on an ongoing basis
SECURITY	**SES Requirement –** To implement security management and system (EU 1035/2011)	To close existing NCs and OBS identified during the common requirement audits performed. Provide an implementation plan and implement immediate actions.	CAP defined and agreed with DAC Immediate security risks identified and resolved or actions started to implement measures: security key tracker purchase call for tender closed. Implementation started and close to final. ICAO RCS related risk / hazard assessment methodology will be applied to identify further potential security risks.	Continuous activity. Organisational items to be resolved.	**No – still ongoing**

7. OTHER ANA SERVICES

Administrative service (ADM)

ADM is the centralised service unit supporting other services of ANA in administrative and technical tasks.

Until end of 2015 ADM consisted of four sub-departments:

IT (INF) – provides and maintains the IT infrastructure and auxiliaries (hard- and software) as well as the internet sites and services of ANA.

It was decided to outsource the service completely to an external service provider (CTIE). This solution will enable a secure, performing and reliable HW and SW central infrastructure, HW and SW continuous maintenance and it is expected to increase the availability of IT infrastructure in all service areas of ANA (service continuity).

Maintenance (ENT) – this service part maintains and refurbishes ANA buildings and other facilities, is involved in the maintenance of green areas and provides driver services.

Secretariat (SEC) – this service part assists ANA in administrative and clerical tasks.

Wildlife management (ornithological observation, scaring off of birds, wildlife reporting) is now allocated to AER where it actually belongs.

8. ANA FINANCIAL PLANNING & SITUATION

Financial Unit framework

Finance (FIN) is responsible for establishing, managing, monitoring budget planning, – execution, managing the cash flow and purchasing / invoicing of all ANA departments and projects.

The financial department is also responsible for cost accounting and calculation in line with European SES performance and charging regulation (see below) as well as the Central Route Charges Office (CRCO) (Eurocontrol) charging principles for En route charges.

Following an internal re-organisation in 2015 it was decided to establish the former ADM sub-department as an independent unit.

RP2 SES related activities

EU Charging and Performance Scheme: 2015 was the first year of application of the EU Regulation 391/2013 (Charging) and 390/2013 (Performance).

Part of the requirement of both regulations is to achieve compliance with the CEF targets on determined unit costs. The ER was finally achieved to be consistent with the set EU wide targets.

A second important task for FIN was to monitor costs and to report the actual 2015 cost outturn on ER and TNC to EC (via DAC).

The principles and calculation formulas of the EU Regulation 391/2013 were adopted. Environmental efforts of airlines in terms of noise emission reduction and time of flight were honoured through a modulation scheme as laid down in Art 16 of the regulation.

Art 16 in EU 391 demands to report on the outcome of levied charges based on a modulation formula and likely effects (over- or undercharging) that have to be rectified in the next charging period. The results shall form part of the annual User Consultation meeting together with the planned unit rate for 2017.

These actions were done by the end of June 2016. The framework for performance monitoring for 2015 was given through the regulation itself and the generic templates and forms provided by the EC to the NSAs in the FABs.

EU Common Requirement Regulation: The EU Regulation 1035/2011 demands the reporting of the financial situation (financial balance sheet and profit/loss accounting).

The financial situation and performance results in 2015 are reported further down in Tables 21 and 22.

Revision of the FIN structure

As part of this exercise ANA had asked the support of independent financial advisers to

- check and if necessary revise the structure of the accounting system in place, in line with all applicable regulations and national legislation and rules;
- establish a financial basis for the certification of the aerodrome;
- identify financial risks and areas for improvement in the processes, procedures and tools used in the FIN department;
- support in the process of assessing the outcome of the CBAs from the SYNergie projects;
- advise on areas for achieving a better cost-efficiency in service provision and / or infrastructure implementation.

The outcome was presented in detailed written reports and presentations to ANA and the MDDI / DAC (pending decision).

ANA implemented and continues to implement the recommendations and structures in the financial system in a stepwise approach.

The effects are clear:

- correct accounting of assets;
- correct allocation of costs in line with the cost allocation scheme agreed for ER and TNC services;
- correct identification of costs for all services rendered against revenues;
- devising of procedures and tools that improve the effectiveness and cost-efficiency in book-keeping, tracking of expenses, invoicing and payment / purchasing…;
- revision of interfaces and interlinking of tools to avoid manual work or double entries etc.

The work is continuing in 2016.

Adaptation of the Budgeting Process: This work firstly requires the restructuring of the financial accounting process in line with the principles in the EU regulation whilst secondly maintaining the budget management processes and principles that continue to be applied in Luxembourg public service organisations.

It was acknowledged during meetings with the financial authorities in Luxembourg (e.g. IGF[44]) that the issue is a matter for improvement that should have start in 2015 already.

ANA has to continue to apply the two approaches in parallel. The methods and tools developed are

[44] Inspection Général des Finances

helping to reduce the efforts and to facilitate this process.

Table 21 summarises the actions launched in the financial framework and processes.

Table 21 – FIN processes and procedures improvement actions 2015 - 2016

Improvement action	Benefit
Modifications budgeting process	Goal: Simplification of the budget structure; clarification of commitment and ventilation rules; tracking and modification of credit-lines. Establishment and documentation of all main procedures and processes in FIN Establishment of a plan for modification of inefficiencies or errors; launch changes Consolidation of SUB and COM in the balance sheet 2015 Balance 2015
Global / per service determined costs	Goal: Check of the hybrid COM/Sub vs. cost-center approach. Establishing all costs for 2014 – 2019, global costs / costs per service. Uncovered costs (identified) (AER, VFR..) AER costs Recommendations (strategic) MDDI/DAC)[45]
Financing of services	Goal: Establish revenues of ER and TNC; State dotation and uncovered parts. Actuals 2015 vs plan (for the EU monitoring exercise 2015) Amortisation of assets Financing of Aerodrome costs (current sit. vs. future) clarification and legal requirements Financing of RWY refurbishment Recommendations (strategic) MDDI/DAC
Adaptation of SAP accounting system	Goal: To formalise the match of budget accounts / general accounts and to reduce errors in all processes / procedures.
Accounting system BOB	Goal: To retrieve data from SAP for ANA internal use. Simplification (automation as far as possible) of steps to transfer data; Documentation of processes / procedures and training of staff
Update process for overdue accounts / unpaid bills	Goal: Identify unpaid bills and clarify / define steps in monitoring and control Establishment of amounts since 2009 Establishment of procedures and rules
Review / formalisation of purchasing process	Goal: Clear rules and procedures to be followed in all purchases / contracts (by Purchasing Process Coordinator) Revision of rules and procedures for purchasing of goods and services
Review / formalisation of invoice management	Goal: Clear rules and procedures (by Purchasing Process Coordinator) Revision of rules and procedures for invoicing
TVA payments	Goal: To consistently apply the exemption from paying VAT as far as possible. Check of all accounts and invoices (done) Establish according mechanisms and tools
Setup of revised billing process for en route and terminal charges	Goal: Check and re-calculation of charges in line with EU Regulation and ensuring function of modulation of TNC TNC 2015 consolidation TNC 2017 revised charges Recommendations (MDDI/DAC)
CBA SYNergie assessment	Goal: To assess (by an independent financial adviser) the CBAs delivered by 2 FABEC partners in the frame of the SYNergie project internally and externally. Full cost estimates and comparison of offers Recommendations (strategic, technical, legal and operational) to MDDI[46]

Note: Achievements during 2015/16.

Adaptation of the State Budget process. During the KPI and management reviews in 2016 more ANA internal and external issues were surfaced and discussed and further steps were agreed on.

The KPI review 2016 (April) clarified that the current Cost-Efficiency (CEF) targets for ER, TNC and AER costs lacked a reliable and valid basis and could not be achieved. The outcome of the final exercise for 2015 in the frame of the PRU Monitoring 2015 exercise indicated that actual costs were substantially higher than determined costs for 2015.

It was acknowledged that the strategic recommendations as outlined in the report (see footnote 45 below) including the CBA on the SYNergie need first to be decided by State authorities before a proper KPI on CEF for the three service areas can be established.

[45] A full report of the entire exercise is available and issued to MDDI /DAC in April 2016 (ANA, 2016; Proposition d´une nouvelle structure comptable et financière. ANA, April 2016.

[46] Full report on the SYNergie CBA and offers received by ANA delivered in April 2016 to MDDI as part of the report referenced in footnote 45.

Investment planning

Investments (CAPEX[47]) in technical and operational infrastructure projects are an important area directly related to the recommendations and the outcome and decision on the SYNergie project and CBA. The Luxembourg FPP assumed no major investments in 2017 – 2019 pending the decisions.

The investments for 2015 and 2016 (Technical infrastructure) are listed in the Chapter on PMO

One important issue to be resolved is the timely start of the budget planning process that must allow sufficient time to coordinate, check, advise, and to consolidate the figures. This has been achieved for the 2017 budget as far as they are not subject to the SYNergie strategy and plan.

Additional steps in project budgeting, tendering and purchasing were planned and implemented with the support from a purchasing coordinator; this process is ongoing.

Results in FIN KPI performance

Table 22 lists the results against PIs in KPI # 12 – 15

The cost saving target in

- **PI# 41 & 42**: En Route (ER) and Terminal (TNC) determined costs of 2,1% per year during RP2 (2015-2019) in accordance with EU target were achieved; the determined costs for RP2 are consistent with EU wide targets.
- Actual ER and TNC costs for 2015 were higher than planned.
- **PI# 43**: The AER cost base and financing was proposed but not yet decided by the end of June 2016. The targets to reduce costs are therefore without reference.

The FIN Department is more and more able to monitor and track costs on a regular basis and in close cooperation with the departments and with PMO (project related expenses).

Due to the re-prioritisation of projects or cancelled projects, delays in the implementation between the planned budget for projects and actual expenses were detected during the monitoring exercise in 2016.

All future plans and the current situation are subject to the strategic directives that ANA proposed, aiming for synergies and saving service related costs in future. It is pertinent that the related actions are implemented as planned to reach the targets.

As regards **PI# 44 – 46** ANA FIN department has achieved the targets to bring down the number of unpaid bills and recalls.

[47] Capital Expenditure

Table 22 – FIN KPI results 2015 and comparison to 2013/14

FIN Dept - KPI # 12 - 15 - Cost reduction En Route / Terminal / Aerodrome (SUB) & Productivity increase - Achievement 2014 - 2015 (Q1-Q4) - 2016 (Q1)					
KPI 12 & 13	**Cost efficiency - reduce determined costs for En Route & Terminal services**	**2014**	**2015**	**2016**	**Annual targets**
PI 41	Cost reduction En Route costs (RP2)	NA	not achieved	TBD	minus 2,1%
PI 42	Cost reduction Terminal costs (RP2)	NA	not achieved	TBD	minus 2,1%
KPI 14	**Cost efficiency - subsidised part (SUB)**				
PI 43	Cost reduction aerodrome costs (as of 2015)	NA	Financing decision pending	end 2016	minus 1,5%
KPI 15	**Productivity increase**				
PI 44	Reduce # of outstanding receivables (unpaid bills)	72	65	-10%	10%/annum
PI 45	Reduce # of recalls suppliers / total # of bills	182 (6,5% of all bills)	**72 (2,5% of all bills)**	-3,70%	< 3,5%
PI 46	# of customer complaints (billing)	0	0	0	0

Achievements in strategic initiative related activities

FIN is closely involved in the developments as far as financial issues are concerned. FIN was fully involved in the SYNergie projects (ATC, CNS) and provided financial and other data for the Cost Benefit Analysis (CBA) in the frame of the assessment projects with Belgocontrol and DFS.

FIN also achieved to deliver a full strategic and operative report and recommendations on the current accounting system and future FIN structure.

ANA financial situation 2015:

The following Tables 23 and 24 give the financial situation of ANA for the calendar year 2015 (and for the previous year for comparison) as from the externally audited Annual Account 2015.

Balance sheet after appropriation

Table 23 gives the final balance sheet for the year 2015 (January to December) approved by external financial audit.

Table 23 – ANA Financial Balance sheet 2015 (Status 31.12.2015)[48]

BILAN AU 31 DECEMBRE 2015	Note(s)	31/12/2015 EUR		31/12/2014 EUR
ACTIF				
C. Actif immobilisé				
I. Immobilisations incorporelles	***3***			
2 Concessions, brevets, licences, marques, ainsi que droits et valeurs similaires, s'ils ont été				
a) acquis à titre onéreux, sans devoir figurer sous C.I.3		57 871,03		0,00
		57 871,03		**0,00**
II. Immobilisations corporelles	***4***			
1 Installations techniques et machines		11 314,55		26 285,72
2 Autres installations, outillage et mobilier		426 754,86		542 353,79
		438 069,41		**568 639,51**
III. Immobilisations financières	***5***			
6 Prêts et créances immobilisées		50,00		0,00
		50,00		**0,00**
Total actif immobilisé		**495 990,44**		**568 639,51**
D. Actif circulant				
I. Stocks	***6***			
1 Matières premières et consommables		396 831,70		525 696,71
		396 831,70		**525 696,71**
II. Créances	***7***			
1 Créances résultant de ventes et prestations de services				
a) dont la durée résiduelle est inférieure ou égale à un an		1 612 941,37		2 500 105,62
4 Autres créances				
a) dont la durée résiduelle est inférieure ou égale à un an		1 113 869,16		912 704,71
		2 726 810,53		**3 412 810,33**
IV. Avoirs en banques, avoirs en compte de chèques postaux, chèques et en caisse		***12 854 201,98***		***12 680 954,17***
Total actif circulant		**15 977 844,21**		**16 619 461,21**
E. Comptes de régularisation	***8***	**126 428,59**		**97 547,07**
Total de l'actif		**16 600 263,24**		**17 285 647,79**
Les notes figurant en annexe font partie intégrante des comptes annuels.				

[48] Explanatory notes from the Annual Account Report 2015 have been omitted. The details are provided in the document: ANA (2016), Comptes Annuels au décembre 2015.

Table 23 (continued)

PASSIF				
A. Capitaux propres				
I. Dotation de l'Etat	***9***	5 550 087,48		5 550 087,48
V. Résultats reportés	***10***	11 126 864,44		11 285 586,45
VI. Résultat de l'exercice	***10***	***-875 421,14***		***-158 722,01***
Total capitaux propres		**15 801 530,78**		**16 676 951,92**
C. Provisions	***11***			
3 Autres provisions		271 988,39		143 508,19
Total provisions		**271 988,39**		**143 508,19**
D. Dettes non subordonnées	***12***			
4 Dettes sur achats et prestations de services				
a) dont la durée résiduelle est inférieure ou égale à un an		399 054,34		379 548,28
8 Dettes fiscales et dettes au titre de la sécurité sociale				
a) Dettes fiscales		127 689,73		70 954,97
9 Autres dettes				
a) dont la durée résiduelle est inférieure ou égale à un an		0,00		14 684,43
Total dettes non subordonnées		**526 744,07**		**465 187,68**
Total du passif		**16 600 263,24**		**17 285 647,79**
Les notes figurant en annexe font partie intégrante des comptes annuels.				

Profit and loss account

Table 24 below gives the final profit and loss sheet for the year 2015 (January to December) approved by external financial audit.

Table 24 - ANA Financial results (Profit / Loss) 1.1.2015 – 31.12.2015 (and 2014 situation)

COMPTE DE PROFITS ET PERTES POUR L'EXERCICE SE CLÔTURANT LE 31 DECEMBRE 2015	Note(s)	2015 EUR	2014 EUR
A. CHARGES			
1 Consommation de marchandises et de matières premières et consommables		355 394,29	315 374,46
2 Autres charges externes		3 518 149,82	3 603 325,27
3 Frais de personnel	***13***		
a) Salaires et traitements		11 675 950,81	10 821 125,02
b) Charges sociales couvrant les salaires et traitements		659 568,55	596 945,60
d) Autres charges sociales		8 281,01	0,00
4 Corrections de valeur			
a) sur frais d'établissement et sur immobilisations corporelles et incorporelles	***3, 4***	141 903,81	139 913,67
b) sur éléments de l'actif circulant	***6***	170 013,80	172 998,95
5 Autres charges d'exploitation	***15***	650 013,28	261 909,55
8 Intérêts et autres charges financières			
a) autres intérêts et charges		155,45	7,47
Total des charges		**17 179 430,82**	**15 911 599,99**

COMPTE DE PROFITS ET PERTES POUR L'EXERCICE SE CLÔTURANT LE 31 DECEMBRE 2015	Note(s)	2015 EUR	2014 EUR
B. PRODUITS			
1 Montant net du chiffre d'affaires	***14***	15.818.686,70	15.729.785,82
4 Reprises de corrections de valeur			
b) sur éléments de l'actif circulant	***15***	347.256,57	3.255,05
5 Autres produits d'exploitation		29.043,33	19.813,20
8 Autres intérêts et autres produits financiers			
b) autres intérêts et produits financiers		452,01	23,91
10 Produits exceptionnels	***16***	108.571,07	0,00
13 Perte de l'exercice		**875.421,14**	**158.722,01**
Total des produits		**17.179.430,82**	**15.911.599,99**

Les notes figurant en annexe font partie intégrante des comptes annuels.

9. USER & STAKEHOLDER CONSULTATION 2015

This chapter describes the user and stakeholder related activities and formal user consultation process in 2015.

2015 consultation of users

One consultation and information meeting was held in October 2015 with the Airport User Committee (AUC), representatives from airlines operating on Luxembourg airport, lux-Airport and ANA as the aerodrome operators, the regulator for the airport (*Institut Luxembourgeois de Régulation*, ILR[49]), DAC and the MDDI.

- **ANS**: main items were the Terminal Charges (TNC), the modulation, the annual report as well as the annual plan presentation in the frame of the EU regulation for ANS.
- **AER**: main items were the new ground handling service tender, the aerodrome (infrastructure and refurbishment) work planned and the ongoing certification work.

Air Navigation Service consultation

User charges: After a first consultation meeting in June 2014 on the changes to terminal charges (TNC) as of 1st January 2015 a follow up meeting was held in July 2014 to inform users about the steps taken in regard to the modulation of charges in line with Art 16, EU Reg 391/2013 and the results of a series of simulations of the likely impacts on costs for users and the coverage of determined costs.

A final meeting was held in December 2014 in regard to all regulated ANS subjects with a main item: TNC - which was agreed by MDDI and DAC and later EC.

The TNC formula developed, simulated and applied is adjusted every year in accordance with the performance plan.

ANA has reported the outturn of actual costs for En Route and Terminal ANS in June 2016 to DAC and MDDI. The outturn and proposed revision of the actual TNC will be a main item in the 2016 autumn user consultation meeting. The new TNC rate will by then be agreed by DAC and MDDI and users will be informed.

ER charges are subject to consultation at regional level with Belgium, MUAC and Luxembourg.

User consultation on ANA Strategy: During the user consultation meeting users were also informed about the ongoing SYNergie studies and plans.

Aerodrome user consultation

ANA, in its capacity of the Aerodrome Operator, keeps close ongoing exchange with all aerodrome partners and airport users in the frame of the certification work. This work is described in Part 2 of this report.

One part of the official and formal user consultation is directed at aerodrome developments, the planning of infrastructure works and consulting users about the best possible ways to arrange these work in a way that limits if not avoids operational impacts.

During this consultation, ANA reports performance and occurrences during / after RWY works in particular and on the performance and arrangements for removing RWY contamination (e.g. snow, ice, other).

DAC – ANA mutual consultation

The exchange of information and consultation between DAC and ANA on safety regulatory and safety management matters takes place in the format of regular meetings (ADIM).

The aim of these meetings is to create a common understanding of subject matter issues to save efforts and time and to facilitate the preparation of documentation and audits.

These meetings continued throughout the entire reporting period and have proven to be effective and efficient and of mutual benefit.

Consultation with other stakeholders

ANA maintained a close coordination with other stakeholders at State level (MDDI and other Ministries), with lux-Airport, the surrounding communities and other institutions that have a vested interest in the ongoing developments and in the various services of ANA.

[49] ILR is the national regulatory body and was identified as the appropriate Independent Supervisory Authority (ISA) for Luxembourg Airport and granted ISA powers by the Law of 23 May 2012 implementing EU Directive 2009/12/EC on airport charges.

10. HUMAN RESOURCES POLICY

This chapter describes the human resources situation and policy of ANA during the reporting period.

Human resources situation

Human Resources (PER) is responsible for the coordination of personnel demand, recruitment, and the administrative part of the initial, the continuous, the general and the specific job related training together with the State (ministerial) authorities involved and in close cooperation with the staff demanding units.

Many improvements have been achieved and we will further continue to focus on (and as mentioned in former reports):

- Respecting alignment of the processes and procedures at State level.
- Recruitment of sufficient competent staff in line with the specific competence requirements and needs of ANA's technical, operational, managerial and other service areas.

ANA faces problems to recruit the right calibre of staff for some very specific posts. This situation has not changed in 2016.

Since 2015, PER is an independent unit.

A function ´Legal Services´ was created and a legal specialist appointed.

Certified ANA Services

Description of the manpower situation in certified services in March 2016:

- **ATC**: 47 ATC controllers (officials) and 3 contractors worked for this department. 3 controller students were undergoing initial training of which 1 could successfully finish training and 2 of them have been engaged as civil servant.
- **MET**: 20 meteorologists worked for the MET department out of which one is a contractor. There were no students undergoing initial training during the last reporting period.
- **Technique**: 18 staff members are responsible for ANA's technical equipment. The I.T. service is composed of 1.75 agents and 1 manager.
- **AIS**: 15 collaborators worked in the AIS department in 2016. Out of those 3 were hired as contractors in 2015, because in the meantime 2 students will be hired to attend initial training to become full staff members after examination.

(See also Chapters on ATC, MET, AIS, and Technique in this report for details on competence and training of respective unit staff.)

Enablers and Support Services

Enablers for service provision:

Directeur adjoint

The Directeur adjoint is directly responsible for the following services:

- ADM is composed of 2 discrete units (Accueil/ Secretariat/ Statistics and Entretien/ Bâtiment), in 2016 a total of 9 FTE staff.
- Comptable Public 0.5 FTE staff;
- The finance department is composed of 4 staff members who are responsible of the daily business; one new staff member will be hired as a finance manager.
- Contrôle de Gestion 0.5 FTE;
- Achats 1 agent.

Affaires juridiques et ressources humaines

The Human Resources/Legal service has 4 collaborators in human resources functions and one manager.

A Training Unit is integrated into the HR department. It establishes and develops processes and procedures for a competence-based training programme. The effectiveness and quality of training that is delivered to ANA staff is evaluated. A training tracking and recording tool (Consense Training Module) is in place and accessible by all departments.

Certification Plans d'urgence, Programmes, Quality/ Compliance, Safety ANSP, Safety AER, Security, Stratégie/ Perfomance

A total of 9.5 staff members (in 2016), including members of the safety management worked in the safety department in March 2016. Each operational department provides a safety officer and a deputy safety officer assigned to this task as part of their normal responsibilities from within the departments who collaborate closely with the safety department.

One program manager supervises the management and the purchasing of the different projects and is supported by an assistant and the purchasing process coordinator. Project leaders and task leaders are assigned to projects from the respective departments involved in the projects on a part-time basis.

Aerodrome services

- **Fire brigade (SIS)**: 47 fire fighters worked in the SIS department.

- **Electro technical service (ELE)**: 13 electricians worked in this department.
- **Operations**: 5.5 FTE/ people worked in that department.
- **Infrastructure**: 1.5 FTE/ people worked in that department.

Human resources policy

This sub-chapter describes the way in which ANA sets its policy and how it achieves to justify, recruit and finally acquires its human resources in accordance with operational, safety, technical and other demands. These conditions have not changed during 2015 – 2016.

ANA acknowledges the contribution of its personnel to a safe, efficient, continuous and sustainable service in air navigation and aerodrome services. The core task of the HR function in ANA is to ensure that ANA recruits staff of the right calibre and maintains and develops the skills of its personnel at all levels as required by the services and in alignment with ANA's strategy. The structure, processes and procedures set up in HR as well as the policies that drive the work of HR have been designed in such a way as to support ANA in the achievement of its strategic goals.

ANA's duties and responsibilities are constantly increasing, leading to a growing need in staff numbers and changes in staff competence. The exact recruitment and training / competence needs are identified, defined and justified inside ANA.

ANA hires staff either as civil servants (public officials), employees (agents) or workers. Occasionally it also contracts consultants who assist with specific projects, provide specific competences or help to overcome immediate staff shortages.

The following paragraph describes the hiring procedure, which is different for each staff group. ANA requires the approval of the Ministry of Sustainable Development and Infrastructure (MDDI) before recruiting.

For civil servants, employees and workers it also needs the approval of the Government Council and of the *"Commission d'économies et de rationalisation (CER)".*

Impacts from Strategic Initiatives: The new strategic initiative launched in 2014 of course also impacts the human resources requirements in terms of creating new or changes to existing functions, competences and skills.

One of the aims of the SYNergy projects launched in 2014 is to use and build the competence of existing staff to cope with the changes and prepare to cover the new missions related to the new role as aerodrome operator and especially to achieve the aerodrome certificate in 2017.

This ´re-shaping´ is necessary to make use of available staff in new functions rather than increase staffing and related costs.

Civil servants

The hiring procedures for officials have not changed during 2015-2016.

When ANA has received the approval of the responsible authorities, it asks the *"Ministère de la Fonction Publique et de la Réforme Administrative*" to organise an exam. If the number of successful candidates exceeds the number of available jobs, the candidate(s) with the highest marks get the job(s).

If ANA wasn't the only public service administration to announce a job, the successful candidates and all the participating administrations get together to find a suitable matching between candidates and specific jobs on offer. In case of high-ranking positions, ANA can choose between all successful candidates.

For ATC, MET, AIS and SIS, successful candidates are sent on specialized training courses that take from 6 to 30 months, depending on the type of training. Typically, these specialized training courses are delivered abroad (commonly France and Germany).

In all other departments successful candidates follow a 2 to 12 weeks training in a governmental institute in Luxembourg accompanied by on-the-job training.

At the end of the initial training the candidates have to pass a second exam in order to be definitely appointed.

Employees and workers

If ANA has received the approval of the responsible authorities, it asks the *"Ministère de la Fonction Publique et de la Réforme Administrative"* to publish the job.

All candidates send in their application via that Ministry and ANA then choses from the complete list of suitable candidates. All employees are trained on the job and follow a two weeks training at the governmental institute in Luxembourg.

Consultants

If ANA detects a need for additional assistance in a specific domain and for a limited time period it has to foresee the approximate amount in its budget proposition for the following year.

During the following year ANA can propose a candidate to the Ministry of Sustainable Development and Infrastructure. Having received written approval from the Minister, the director of ANA signs the contract with the consultant.

ANNEX 1 – ABBREVIATIONS

a/c	Aircraft
ADD	Aerodrome Data Display
ADM	ANA Administrative Department
ADQ	Aeronautical Data Quality
AER	ANA Aerodrome Department
AFTN	Aeronautical Fixed Telecommunication Network (legacy system)
AGL	Airfield Ground Lighting
AIS	Aeronautical Information Service
ALCMS	Airport Lighting Control and Management System
AMC	Accepted Means of Compliance
AMHS	ATS Message Handling System
AP	Annual Plan
ANSP	Air Navigation Service Provider
APP	Approach Control Service
AR	Annual Report
AROC	Airline Representatives and Operators Committee (Luxembourg)
ARTAS	ATM Surveillance Tracker and Server
A-SMGCS	Advanced Surface Movement Guidance and Control System (ground radar)
ATC	Air Traffic Control
ATFM	Air Traffic Flow Management
ATIS	Automatic Terminal Information System
ATM	Air Traffic Management
ATM MP	ATM Master Plan (SESAR)
ATM – SE	ATM specific (technical) event (occurrence)
AWOS	Automatic Weather Observation System
BE-LUX PP	Belgium – Luxembourg Performance Plan (En route)
BOB	Budget System in use in ANA
BP	Business Plan
CBA	Cost Benefit Analysis
CAP	Corrective Action Plan
CAPEX	Capital Expenditure
CDO	Continuous Descent Operation
CEF	KPA - Cost-Efficiency
CfT	Call for Tender
CGDIS	Corps Grand-Ducal d´Incendie et de Secours
CNS	Communication, Surveillance and Communication Dept
COM	Communication
CRCO	Central Route Charges Office, Eurocontrol
DAC	Direction de l´Aviation Civile
DFS	Deutsche Flugsicherung
DoV	Document of Verification
DME	Distance Measuring Equipment
DVOR	Doppler VHF Omni-directional Ranging
EASA	European Agency for the Safety of Aviation
EC	European Commission
eTOD	electronic Terrain and Obstacle Data
EU	European Union
ECMWF	European Center for Medium-Range Weather Forecasts
ELE	ANA Electro technical Service Department
ELLX	ICAO code for Luxembourg airport

ENV	KPI - Environment
EoSMS	Effectiveness of Safety Management System (Questionnaire)
ER	En Route
ESSIP	European Single Sky ImPlementation (Plan; Eurocontrol)
FABEC	Functional Airspace Block Europe Central (BE, CH, DE, FR, LU, NL + MUAC)
FAT	Factory Acceptance Test
FDPS	Flight Data Processing System
FHA	Functional Hazard Analysis
FMTP	Flight Message Transfer Protocol
FOD	Foreign Object Debris
FPP	FABEC Performance Plan
FTE	Full Time Equivalent
GP	Glide Path
IAIP	Integrated Aeronautical Information Publication
ICAO	International Civil Aviation Organisation
IGF	Inspection Général des Finances
ILR	Institut Luxembourgois de Régulation
IMS	Integrated Management System (ANA)
IOP	Interoperability
IR	(EC) Implementing Regulation
ISO	International Standards Organisation
KPI	Key Performance Indicator
L-AST	Local Aerodrome Safety Team
LOC	Localiser
LSSIP	Local Single Sky ImPlementation (State ANSP and Regulator/ NSA Plan)
LVP	Low Visibility Procedure
MDDI	Ministre du développement durable et des infrastructures
MET	Meteorological service
MoU	Memorandum of Understanding
MUAC	Maastricht Upper Area Control (Eurocontrol)
NA	Not Applicable
NAV	Navigation
NDB	Non Directional Beacon (a navigation aid)
NM	Network Manager (Eurocontrol)
NOTAM	Notice to Airmen
NSA	National Supervisory Authority
OPS	Operations
PANS	Procedures for Air Navigation Service
PCH	Administration Ponts et Chaussees Luxembourg
PI	Performance Indicator (local/ national)
PIA	Plan d´Intervention Aeroportuaire
PIB	Pre-flight Information Bulletin
PIU	Plan d´Intervention d´Urgence
PMG	Performance Management Group (FABEC)
PMO	ANA Programme Management Office
PPP	Portfolio-Program-Project structure
PTO	Procèdures Technique et Opèrationelles
QM	Quality Management
RAT	Risk Assessment Tool
RI	Runway Incursion
RDP	Radar Data Processor
RMCDE	SuRveillance Message Conversion and Distribution Equipment

RP	(SES Performance Scheme) Reference Period (RP1 = 2012 - 2014; RP2 = 2015 - 2019)
RWY	Runway
SAF	KPI - Safety
SDDS	Surveillance Data Distribution System
SES	Single European Sky (EC)
SIG	Système d´Information Géographique
SIS	ANA Fire brigade and rescue service (Service Incendie et Sauvetage)
SLA	Service Level Agreement
SLoA	(ESSIP/LSSIP) Stakeholder Line of Actions
SMI	Separation Minima Infringement
SMR	Surface Movement Radar
SMS	Safety Management System
SMT	Strategic Management Team (ANA)
SMU	ANA Safety Management Unit
SNOWTAM	special series NOTAM indicating snow or slush conditions on airports
SPI	Surveillance Performance and Interoperability
SSAS	Software Safety Assurance System
SUR	Surveillance
SURNET	Surveillance Network
TAF	Terminal Aerodrome Forecast (MET)
TAR	Terminal Radar
TMA	Terminal Control Area
TNC	Terminal Costs
TOD	Terrain and Obstacle Data
ToR	Terms of Reference
TOT	Taxi Out Time
TWR	Tower Service
TWY	Taxiway
UPS	Un-interruptible Power Supply
VoIP	Voice over Internet Protocol
WMO	World Meteorological Organisation
WP	Work Package

ANNEX 2 – ANA ANSP Safety Plan 2015 – 2016 – STATUS of Achievements against Objectives & Actions

FOCUS AREA 1: UNION-WIDE PERFORMANCE TARGETS FOR SAFETY KEY PERFORMANCE AREAS						
REF. #	**OBJECTIVES**	**ACTION ITEMS**	**2015**	**2016**	**Owner**	**Status June 2016**
1.1	**Effectiveness of safety management**					
1.1.3	**Safety standards and procedures**	Verify that all primary systems have redundant capacities	Q4		ANA/SMU	Q2 2016
		Develop and document emergency/contingency procedures	Q4		ANA/SMU	Q3 2016
		Distribute procedures to all appropriate staff		Q1	ANA/SMU	Q3 2016
		Coordinate emergency/contingency plans with all interfaces		Q1	ANA/SMU	Q3 2016
		Review / update safety standards and procedures on a regular basis		Q1	IMS	Q4 2016
1.1.3	**Adoption and sharing of best practices**	Establish a structure to identify safety best practices	In place / Continuing activity		SMU	In place / Continuing activity
		Share best practices with industry stakeholders as required by regulation	Continuing activity		SMU	Continuing activity
		Re-implement runway safety team (RST)	In place / Continuing activity		ANA	In place / Continuing activity
		Participate to IntACT audits within other FABEC ANSPs	Continuing activity		SMU	Continuing activity
		Attend industry workshops on safety and SMS best practices	Continuing activity		SMU	Continuing activity
		Systematically share safety lessons across the organisation	Continuing activity		SMU	Continuing activity
		Publish a policy to encourage proactive sharing of safety practices and lessons	In place / Continuing activity			In place / Continuing activity
		Make safety performance info available to public (info not governed by applicable requirements)	Continuing activity			Continuing activity
1.1.3	**Integrated safety planning process**	Publish organization safety plan on a periodic basis	Continuing activity		SMU	Continuing activity
		Include goals, targets and responsibilities in safety plan	Q3	Q3	ANA/SMU	Q3 2016
1.1.3	**Safety-related interfaces**	Develop, coordinate and manage safety-related interfaces	Continuing activity		ANA/SMU	Continuing activity
		Document interfaces through contractual agreements	Continuing activity		ANA/SMU	Continuing activity
		Review / update these agreements on a regular basis	Continuing activity		IMS	Continuing activity
1.1.3	**Competency**	Set up a process for feedback on training effectiveness	In place / Continuing activity		TRU	In place / Continuing activity
1.1.3	**Safety reporting, invest. & improvement**	Systematically share lessons learned across the organisation	Continuing activity		SMU	Continuing activity
		Publish a clear policy to encourage proactive reporting	Completed		ANA/SMU	Completed
1.1.3	**Safety performance monitoring**	Make safety performance info available to public (info not governed by applicable requirements)	Continuing activity		ANA/SMU	Continuing activity
1.2	**Risk Assessment Tool (RAT)**	Apply RAT to all SMIs and RIs (regardless whether ANA has a contribution or not)	Continuing activity		ATC S.O.	Continuing activity
		Apply RAT to 100% of ATM-Specific Events	Continuing activity		CNS S.O.	Continuing activity
1.3	**Just culture implementation**	Develop a Just Culture policy	Completed		SMU	Continuing activity
		Document that the process has no impact on pay of the staff member until the end of the investigation	Completed		ANA	Completed
		Include just culture principles in all training curricula (ab-initio and recurrent)	Continuing activity		TRU	Completed
		Define qualifications and training requirements for safety investigators	Completed		TRU	Continuing activity

REF. #	OBJECTIVES	ACTION ITEMS	2015	2016	Owner	Status June 2016
		Provide legal support to staff in case of prosecution / legal action	In place		ANA	In place
		Procedure enabling staff concerned to comment investigation findings	In place		SMU	In place
		Involve experts in decision "honest mistake" vs. "unacceptable behavior"	In place		ANA	In place

FOCUS AREA 2: EU SAFETY KEY PERFORMANCE INDICATORS (SMIs, RIs, AIs and ATM SEs)						
REF. #	**OBJECTIVES**	**ACTION ITEMS**	**2015**	**2016**	**Owner**	**Status June 2016**
2.1	**SMI's with ANA contribution**	Monitor number of incidents, severity and trends on a monthly basis	Continuing activity		SMU	Continuing activity
		Present lessons learned during ATC APP safety meetings	Continuing activity		SMU	Continuing activity
2.2	**Runway incursions with ANA contribution**	Monitor number of incidents, severity and trends on a monthly basis	Continuing activity		SMU	Continuing activity
		Present lessons learned during ATC TWR safety meetings	Continuing activity		SMU	Continuing activity
2.3	**Airspace infringements**	Monitor number of incidents, severity and trends on a monthly basis	Continuing activity		SMU	Continuing activity
		Present lessons learned during ATC safety meetings	Continuing activity		SMU	Continuing activity
2.4	**ATM Technical Specific Events (ATM-SE)**	Monitor number of incidents, severity and trends on a monthly basis	Continuing activity		SMU	Continuing activity
		Present lessons learned during safety meetings	Continuing activity		SMU	Continuing activity

FOCUS AREA 3: ANA INTERNAL SAFETY KEY PERFORMANCE INDICATORS						
REF. #	**OBJECTIVES**	**ACTION ITEMS**	**2015**	**2016**	**Owner**	**Status June 2016**
3.1	**ATM incidents with ANA contribution**	Monitor number of incidents , severity and trends on a monthly basis	Continuing activity		SMU	Continuing activity
		Present lessons learned during safety meetings	Continuing activity		SMU	Continuing activity
3.2	**CNS-MET incidents with ANA contribution**	Redefine CNS-MET direct contribution incidents KPIs (according to RAT)	Q4		Q4 2016	
		Monitor number of incidents, severity and trends on a monthly basis	Continuing activity		SMU	Continuing activity
		Present lessons learned during safety meetings	Continuing activity		SMU	Continuing activity
3.3	**ELE incidents with ANA contribution**	Monitor number of incidents, severity and trends on a monthly basis	Continuing activity		SMU	Continuing activity
		Present lessons learned during safety meetings	Continuing activity		SMU	Continuing activity
3.4	**Availability of CNS/MET safety equipment**	Monitor monthly the availability of the CNS/MET, severity and trends	Continuing activity		SMU	Continuing activity
		Identify root cause when availability figure is not met provide remedial actions	Continuing activity		SMU	Continuing activity

FOCUS AREA 4: AUDITS / SURVEYS / RECOMMENDATIONS						
REF. #	**OBJECTIVES**	**ACTION ITEMS**	**2015**	**2016**	**Owner**	**Status June 2016**
4.1	**NSA audit : (2012)**	Implement audit corrective action plan	Continuing activity		SMU	Completed
4.2	**- NC : Software safety assurance system**	Apply SSAS process to ALCMS, AMHS, NDB, DIK-DVOR		Completed	Completed	Completed
		Apply SSAS to LE/WDU NDB, FDP, AWOS/ATIS, A-SMGCS, IOP G., RVR, SDDS	Continuing activity		CNS	Continuing activity
4.3	**- NC : Stakeholders**	Further develop SLAs with external and internal stakeholders	Continuing activity		ANA/SMU	Continuing activity
4.4	**- OBS : Risk assessment & mit. for change**	Conduct risk assessments until post implementation of changes	Continuing activity		ANA/SMU	Continuing activity
4.5	**- OBS : Occurr. reporting improvement**	Implement proactive voluntary reporting	Completed		SMU	Completed
4.6	**- OBS : Procedures in Saf. Mgmt Manual**	Safety Management Manual to be completed / finalized	Continuing activity		SMU	Continuing activity
4.7	**- OBS : Scope of the SMS**	Define the scope of SMS and add into Safety Management Manual	Completed		SMU	Completed
4.8	**- OBS : External Services and Supplies**	Define procedure to address safety requirements to be fulfilled by subcontracted personnel	Completed		SMU	Completed
4.9	**NSA audit : minor changes (2013)**	Implement audit corrective action plan	Completed		SMU	Completed
4.10	**- NC : Change methodology not followed**	Revise change management procedure	Completed		SMU	Completed
4.11	**- NC : Admin. procedures inconsistency**	Revise change management procedure	Completed		SMU	Completed
4.12	**- NC : Use of different methodology**	Revise change management procedure	Completed		SMU	Completed
4.13	**- OBS : Safety assessment terminology**	Revise change management procedure	Completed		SMU	Completed
4.14	**- OBS : Criteria to define type of change**	Revise change management procedure	Completed		SMU	Completed
4.15	**EASA audit : UNC's**	Implement audit corrective action plan	Completed		SMU	Completed
4.16	**IntACT audits**	Participate in audits at other ANSPs	Continuing activity		SMU	Continuing activity
4.17	**ISO certification audit**	(No safety-related findings during last audit in May 2015)	Continuing activity		IMS	Continuing activity
4.18	**Eurocontrol safety culture survey**	Implement corrective action plan	Continuing activity		SMU	Continuing activity
4.19	**AET recommendations**	Follow up recommendations	Q4		On-going	On-going
4.20	**Internal audits and surveys**	Implement remedial actions	Continuing activity		ANA/SMU	Continuing activity

FOCUS AREA 5: EXECUTION OF RECURRENT SAFETY ACTIVITIES AS PER EU REGULATION 1035/2011 AND ACCORDING TO EC 482/2008						
REF. #	**OBJECTIVES / AREAS FOR IMPROVEMENT**	**ACTION ITEMS**	**2015**	**2016**	**Owner**	**Status June 2016**
5.1	**Staff competency**	Verify that personnel is adequately trained, competent and licensed (if applicable)	Continuing activity		TRU	Continuing activity
5.2	**External Services and Supplies**	Review adequate justification of the safety of externally provided services	Continuing activity		ANA Depts	Continuing activity
		Verify that ext. staff have knowledge and understanding of supported services	Continuing activity		ANA Depts	Continuing activity
5.3	**Risk assessment & mitigation (current ops)**	Perform risk assessment and mitigation of ANA units working on current operations	Continuing activity		ANA Depts	Continuing activity
5.4	**Safety investigation (ATM and technical)**	Perform safety investigations	Continuing activity		ANA Depts	Continuing activity
5.5	**Remedial actions**	Derive remedial action for all significant ATM and technical occurrences	Continuing activity		ANA Depts	Continuing activity
5.6	**Lessons learned**	Disseminate safety practices and lessons learnt within the organization	Continuing activity		SMU	Continuing activity
5.7	**Safety surveys**	Carry out departmental routine safety surveys	Continuing activity		ANA Depts	Continuing activity
5.8	**Safety monitoring**	Continuously analyze incident number, severity and trends	Continuing activity		SMU	Continuing activity
5.9	**Safety records**	Maintain all safety documentation complete and up-to-date	Continuing activity		SMU	Continuing activity
5.10	**Software safety assurance system (SSAS)**	Apply the software safety assurance system	Continuing activity		CNS	Continuing activity
5.11	**Change management**	Safety assessment and mitigation with regard to change	Continuing activity		ANA Depts	Continuing activity
FOCUS AREA 6: FABEC IMPLEMENTATION						
REF. #	**OBJECTIVES / AREAS FOR IMPROVEMENT**	**ACTION ITEMS**	**2015**	**2016**	**Owner**	**Status June 2016**
6.1	**FABEC implementation**	Continue participation in all FABEC safety activities	Continuing activity		ANA/SMU	Continuing activity

FOCUS AREA 7: NATIONAL STATE SAFETY PROGRAM						
REF. #	**OBJECTIVES / AREAS FOR IMPROVEMENT**	**ACTION ITEMS**	**2015**	**2016**	**Owner**	**Status June 2016**
7.1	**National State Safety Plan**	Comply with National (State) Safety Plan (once published)	TBD	TBD	ANA/SMU	TBD

On-going / Continuing Activity
Late / on-going
Completed

ANNEX 3 – ANA AOP - CERTIFICATION STATUS OF ACHIEVEMENTS

Priority WP identified by DAC	Description	Target Dates	Status (end May 2016)
WP 4	Safeguarding of Aerodromes	End 11/2016	Under progress, waiting on initial comments from DAC
WP 5	Aerodrome Emergency Planning	End 11/2016	July /August for first version
WP 7	Low visibility operations	End 11/2016	For discussion with DAC by end of this month
WP 11.1	Safety Management Systems	End 11/2016	First draft (high level document) complete and given to DAC for review
WP 11.2	Safety Management Systems Detailed	End 11/2016	No status
WP 11.2	Occurrence reporting	End 11/2016	Completed
WP 14.1	Personnel requirements	End 11/2016	Job description available for all departments of ANA and has been validated by the HR
WP 14.2	Training and proficiency check programs	End 11/2016	Draft ready and presented to training officers. Waiting for feedback
WP 21	Changes /Management of Changes	End 11/2016	Linked to safeguarding of Aerodromes (WP4)
WP 26	Aerodrome Works Safety	End 11/2016	Initial draft developed
WP 27	Use of Aerodrome by a higher code letter aircraft	End 11/2016	Under informal review with DAC
Other work packages			
WP 12 + WP 28	Fuel Quality – handling of dangerous goods	End 11/2016	Completed. Under review with DAC
WP 20	Use of psychoactive substances and alcohol	End 11/2016	Done; goes into Aerodrome manual as a chapter. Under review (DAC)
WP 24	Operations in winter conditions	End 11/2016	Done, under review with DAC (update : next winter season)

ANNEX 4 - ANA STRATEGIC INITIATIVES: STATUS OF PROGRESS IN 2015-2016

Strategic Developments

In early 2014 work started on a new vision and strategy for ANA future (´ANAFuture´) at CEO level and in consultation at MDDI level.

The strategic initiative concentrates on all services and processes across ANA with a focus on improvements in regard to: CEF, SAF, ENV and CAP. The contributions and demands from a financial, legislative, regulatory, social and human resources, technical and operational perspectives are taken account of in the assessment and evaluation of the options.

The results are shared and coordinated at high (ministerial) level and with all State stakeholders.

> Note: Since Q2 / 2014 ANA is asked to perform in the role as the Aerodrome Operator in Luxembourg. The according changes in the national law will most probably come into force in 2016[50].
>
> The revised law demands ANA to establish a new strategic vision and roadmap for the two service areas: ANS and AOP. The nomination as Aerodrome Operator in addition to the role as the ANSP demanded an even more focused view at the business requirements for the future. This is a main subject in the new ANA Business Plan 2016 – 2020.

The original strategy was documented in a separate communication document for MDDI and is included in a condensed format in the Annual Plan 2014-15 and revised / updated in the ANA Annual Plan 2015-2016[51].

The work continues and new strategic issues have entered the agenda during 2015.

Status of strategic initiatives 2015-16

The status of achievements is reported in this report in respective separate chapters and in the Table below.

The following major assessment projects in the *ANAFuture* strategy were started or finished (summary; for details see the Table below):

- ANA – airport partners: Aerodrome certification preparation project; status: **ongoing**;
- ANA – Belgocontrol Synergy assessment project on the options for Approach services; (similar: ANA – DFS APP SYNergie study); status: **finished**;
- ANA – SELEX - SUR Chain – establishment and verification of technical requirements for a minimum upgrade of the existing SUR chain in line with interoperability and safety requirements; status: **ongoing**;
- ANA – CNS / SMU – Safety assessment of the existing surveillance system (EU1207/2011); status: **finished** / delivered to DAC;
- ANA – AIS – ADQ / TOD implementation, status: **ongoing**;
- ANA – Belgocontrol procedure design study for the implementation of CDO in the Luxembourg airspace; final revision and agreement on implementation steps; status: **data available; project on hold**

[50] Projet de loi portant modification de 1) la loi modifiée du 21 décembre 2007portant création de l´Administration de la navigation aérienne ; 2) la loi modifiée du 31 janvier 1948 relatives à la règlementation de la navigation aérienne (No 6895/01)

[51] ANA (2014), ANA Annual Plan 2014 – 2015, released version and ANA (2015), ANA Annual Plan 2015-2016, released version.

Table – Status of achievement and ongoing activities in regard to proposed strategic initiatives in the 2015 – 2016 reporting period[52]

Service	Description - Current Situation	Strategic Vision & Direction	Considered Options for Change	Envisaged Advantages / Gains	KPI / PI Areas	Status of Projects / Activities in the period July 2014-June 2015
ATC	Provision of ATS in LU airspace en route (with Belgocontrol and MUAC), terminal (ANA PP) and at the airport (ANA TWR)	Reduce service provision and service maintenance costs: – personnel costs, training costs; – investment costs (ATM systems, housing, contingency) – certification related costs	– Implementation of a contingency solution for APP services through a FABEC partner – Delegation of entire Luxembourg airspace to a FABEC partner – Creation of a ground control function (including parking, apron service) and exploitation of ground radar A-SMGCS capabilities – Successive complete delegation of the LU airspace to a FABEC partner to provide APP	– Reduction of the number of controllers (non-replacement of retiring controllers) – Long-term cost reduction in staff related costs, maintenance costs, investment costs – Increased efficiency in use of available ATS personnel through integrated services (TWR and ground) – Use of existing traffic handling capacity of FABEC partners	– Cost efficiency – Safety – Security – Capacity	– Contingency equipment installed; checked by DAC (finished; – Assessment Project ANA – Belgocontrol (APP Syn) on legal, technical, operational, financial feasibility, CBA of a delegation of service provision to Belgocontrol started; finalised and delivered to MDDI for decision; – Assessment project ANA – DFS with the same scope and aim as above started, finalised and delivered to MDDI for decision.

[52] This table refers to Table 2 in the Annual Plan 2015-2016.

Service	Description - Current Situation	Strategic Vision & Direction	Considered Options for Change	Envisaged Advantages / Gains	KPI / PI Areas	Status of Projects / Activities in the period July 2015-June 2016
CNS	Monolithic air traffic system based on the UNIX platform and not corresponding to systems of FABEC partners. ANA surveillance system works in full autonomy; needs to be replaced or updated; ANA COM / NAV system (ILS, DME etc) needs to be replaced; demand 8.33 VCS; Network infrastructure replacement	CNS system infrastructure to correspond to technical standards in use in FABEC: – ensure IOP – enable radar data / communication exchange for contingency – reduce investment costs – improve (augment, adapt) skills – delegation of CNS tasks and obligations to FABEC partner	– SUR chain upgrade open standard architecture – SUR chain upgrade or replacement to be done in line with the finally chosen strategic direction (on service provision and available / technical solutions from FABEC partners)	– Implementation of full radar contingency solution without implementing 3rd radar – integration and exchange of radar data with FABEC partners – update of current SUR system at reduced investment costs as a common purchasing with FABEC partners – reduced maintenance, SSAS (SW), SW licensing and system upkeep costs – Reduced Hardware (HW) maintenance and upkeep costs	– Cost efficiency – Safety – Security Other: Interoperability Open system architecture Contingency solution	– ANA – Belgocontrol radar coverage study and tests with integration CANAC / ARTAS solutions agreed, executed and successfully closed; – No need for TAR 3 – project closed; – Implementation of SURNET capabilities (SDDS, IOP gateway) ongoing; – Development of a customised and minimum SUR Chain upgrade implementation concept ongoing; – Assessment of technical options for SUR and data exchange with FABEC partners in the frame of the APP Syn projects ongoing – New HW (virtual server) and network topology implementation ongoing
MET	MeteoLux is the certified MET provider in LU delivering its services to aeronautical and other, non-aeronautical users. MeteoLux has already started and advanced in restructuring its services	Proper accounting of – costs for common infrastructure used provisions; and – costs for operations and personnel for aeronautical and other than aeronautical MET service in MeteoLux budget.	– Total budget cost split at a 50% rate for aeronautical / non-aeronautical services. – Ensure State budget provision for non-aeronautical services.	– Reduce costs for aeronautical users; – Provide cost-efficient services to both aeronautical and non-aeronautical users of MeteoLux services through synergies in equipment use and service provision; – Increase safety; – By taking over State responsibilities improve protection of citizens from dangerous weather phenomena.	– Cost efficiency – Service integrity and reliability – Safety	– Agreement with State on MeteoLux extreme weather alert (as part of the non-aeronautical services) achieved and officially endorsed. – Budget provision for non-aeronautical service provision postponed and due to start in 2016. – AWOS /ATIS system implementation and operational date delayed to autumn 2015.

Service	Description - Current Situation	Strategic Vision & Direction	Considered Options for Change	Envisaged Advantages / Gains	KPI / PI Areas	Status of Projects / Activities in the period July 2015-June 2016
AER	AER already coordinates part of the aerodrome services and infrastructure maintenance with other ANA departments and external partners but not as the leading party. AER is the leading party in the actions towards certification of the aerodrome	– Aerodrome certification (EU Reg 139/2014 / ICAO (by end 2017) – Integration of aerodrome services, including AIS and ELE into one AER entity and management structure – Coordination, planning and management of the entire aerodrome infrastructure, RWY / TWY maintenance in close cooperation with external parties i.e. PCH, luxAirport and airlines	– Clear accountability and responsibility for all aerodrome services – Clear, visible and effective management structures, procedures, processes and responsibilities. – Agree Service Level Agreements (SLAs) and working arrangements with business partners and customers. – Adaptation of PCH working procedures, intervention / maintenance processes with EASA certification requirements.	– Effective and cost-efficient planning and implementation of common aerodrome projects. – Appropriate accounting and budgeting of costs of aerodrome service delivery. – Increase aerodrome safety and service integrity / reliability. – Increase of airport competitiveness.	– Cost efficiency – Service integrity – Aerodrome safety – Aerodrome capacity (through effective management of maintenance and infrastructure projects, integrated service provision) Other: – Competitiveness	– Aerodrome certification preparatory work ongoing with airport partners, project support partner (Aéroport de Paris) and in coordination with MDDI and DAC. – DAC fully involved in the certification process. – Legal establishment of ANA entity “Aerodrome Administration” – PCH aerodrome service functions in line with EASA certification requirements pending.

Service	Description - Current Situation	Strategic Vision & Direction	Considered Options for Change	Envisaged Advantages / Gains	KPI / PI Areas	Status of Projects / Activities in the period July 2015-June 2016
AIS	ANA AIS is not a certified service but cooperates with Belgocontrol AIS as the publisher of the common BE / LU AIP and other aeronautical data and information released by ANA.	– Integration of AIS into Aerodrome Services (AER) – AIS service provision in line with applicable ICAO / EU regulation requirement – AIS as a full aerodrome information and data management broker & provider	– Assign clear accountability and responsibility to AIS – Agreed SLAs and working arrangements (conventions) with business partners and customers – AIS to be assigned clearly as the provider of relevant aerodrome / countrywide related obstacle data and aeronautical data	– Use of further synergies in use of AIS competences in AER (i.e. aerodrome related aeronautical data and info management in line with ICAO / EU regulation requirements (EC 73/2010, ADQ) (including TOD for all pending PANS-OPS, CDOs and aerodrome obstacles). – Cost-efficient and integrated data and info management	– Cost efficiency – Service integrity – Aerodrome safety	– Process and proposal established and sent to MDDI for a national policy / regulatory framework for aeronautical data and information handling in line with ADQ Rule – ministerial decree let in late 2015 setting the legal, organisational and institutional framework for TOD. Further actions pending (DAC) and other ministries. – Electronic Terrain and Obstacle Data (eTOD) tender action and supporting technical requirement doc provided to MDDI. Decision pending. – TOD to implement the developed CDO operation procedures in Luxembourg airspace available. Further actions pending with Belgocontrol.
ELE	ELE is responsible for the installation and maintenance of the availability and integrity of the aerodrome lighting system / infrastructure and aerodrome geodetic database.	– Closer alignment of ELE services with AER services in major projects (i.e. RWY / TWY refurbishment) – Inclusion of the entire aerodrome electrical infrastructure not yet part of ELE services	– Integration and alignment of electrical services in a cohesive service package – Clear responsibility and accountability of ELE services – Agreed SLAs and working arrangements with business partners and customers	– Increased service effectiveness through use of synergies and integration of related services. – Potential for cost-efficiency in project management and service provision. – Reduced closure / unavailability of aerodrome infrastructure during interventions due to better planning and preparation. – Increased safety.	– Service integrity and reliability – Availability of important / safety critical electrical infrastructure – Cost-efficiency – Aerodrome safety	– ELE is involved in RWY / TWY maintenance planning, preparation and implementation (with PCH) and other major infrastructure projects on the aerodrome. – SLA drafted and sent to PCH for endorsement – action still pending. – Contracts or SLAs closed with a number of suppliers ensuring service integrity. – Spare parts management improvement actions started with purchase manager – implementation still pending.

Service	Description - Current Situation	Strategic Vision & Direction	Considered Options for Change	Envisaged Advantages / Gains	KPI / PI Areas	Status of Projects / Activities in the period July 2015-June 2016
SIS	SIS provides a 24/24 hrs firefighting and rescue service on the airport and in the close vicinity of the airport.	– Closer alignment and re-organisation of SIS as part of a national fire and rescue service re-organisation – Study of potential for better alignment of SIS services with operational requirements of the airport – Improve skills / competence of SIS staff in line with EU 139/2014	– Integration of SIS and other national services in a cohesive and workable service package – Agreed service categorisation / SLAs and working arrangements with airport users – Formalisation / standardisation of training as in EASA AM;C s / GM for EU 139 – Initial training of fire fighters Ville de Luxembourg / SIS	– Increased service effectiveness through use of synergies and integration of external services – Potential for cost-efficiency in service provision in line with requirements – Reduced risk of closure / unavailability of aerodrome during contingency situations – Increased / maintained aerodrome safety – Cost savings through using synergies in common training and operations – Certification of AER	– Aerodrome safety – Service integrity and reliability – Contingency provision – Cost-efficiency SIS services are subject in the EU Reg 139/2014 and related EASA AMCs and needs to comply with respective requirements.	– Coordination between SIS / ANA mgmt. and stakeholders at State level on the integration of SIS in the national policy and plan for the provision of an integrated fire and rescue service for Luxembourg has started. – SIS involved and contributes to service manual / PIA and POS updates in the frame of the preparation for aerodrome certification. – SIS has established / is establishing a training and service plan in lien with EASA.

END OF DOCUMENT