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Preliminary Safety Assessment

PROJECT 1234 – Euroville
Airspace Change

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Abstract

This document is a Preliminary Safety Assessment of the airspace changes for the Euroville Centre planned for December 2009. The changes have been assessed as Minor using the criteria set out in ESARR 1 and ESAAR 4.

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CONTENTS

1. INTRODUCTION

The objective of the Euroville airspace development project is to enhance Euroville Air Traffic Service delivery by increasing capacity, reducing complexity and maintaining or enhancing safety provision in the airspace in DIGBY South sector.

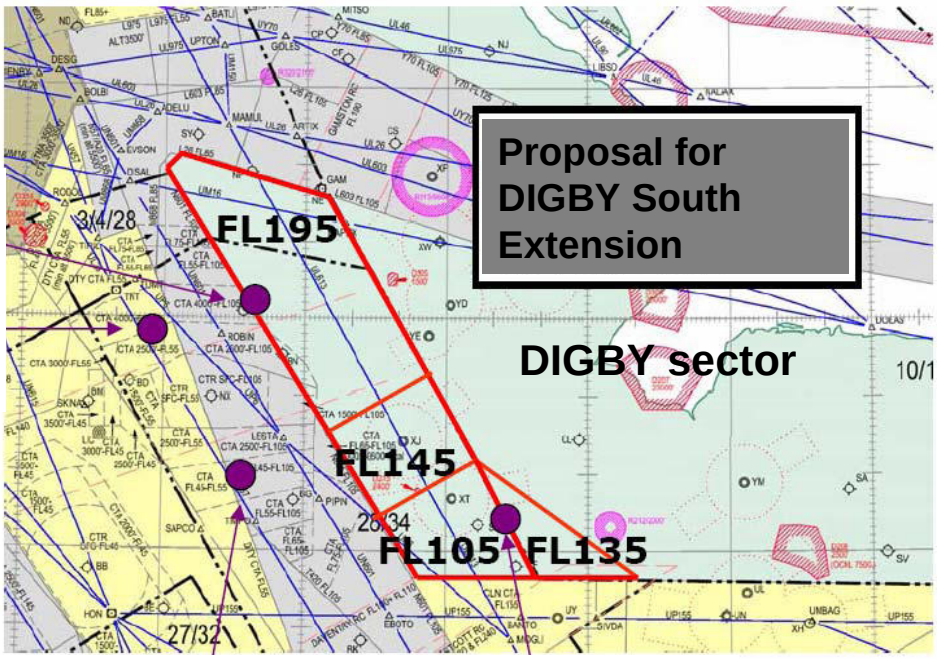
The Euroville development will be introduced through a phased delivery system. DIGBY South will go into service during the March 2010 AIRAC cycle.

The DIGBY South Airspace Extension encompasses:

- A 5nm wide extension to (Route) R-52 between POLLY and R-95 with a base at FL115 to FL195 in the area of NOOSA, stepping up to FL145 to FL195 in the central section and FL195 and above at the northern end. This airspace will utilise Flexible Use of Airspace (FUA) concepts and will become Class C Airspace at specified times before reverting to Class G Airspace outside of these times.

- In addition, permanent Class C Airspace is established above the Flexible Use airspace from FL195 to FL460. This extension will provide additional airspace for tactical vectoring, resulting in a reduction in complexity and therefore workload for DIGBY South.

Figure 1 - DIGBY South Extension



2. PURPOSE OF THIS DOCUMENT

This is a Preliminary Safety Assessment for the proposed changes planned to develop the Euroville Airspace described in the introductory paragraph. The structure of the document follows the guidance set out in the Euroville SMS [1].

The document also presents a justification for the category of change, following the criteria set out in ESARR 1 [2] and ESARR 4 [3] and in EASA regulations formalised by EC 2096/2005 and 1315/2007.

3. SCOPE

The scope of this document is limited specifically to the changes associated with the DIGBY South described in the introductory paragraphs. No other changes at Euroville Centre are within scope.

DIGBY South airspace development safety documentation does not cover the provision of assurance to non-Euroville units impacted by the changes (e.g. Military). It is the responsibility of each ATS provider to assure themselves and the appropriate regulator that any changes introduced at non-Euroville units as a result of the development can be safely implemented.

4. ASSUMPTIONS

1) It is assumed that the changes to existing engineering systems required by the DIGBY South extension will be within the existing design envelope and appropriately assured.

2) It is assumed that no new functionality of a type not already in existence at the Euroville Centre will be introduced as a result of the DIGBY South Extension.

5. RISK ASSESSMENT AND MITIGATION

5.1 Risk Assessment and Mitigation Process (Option 1 – in the case when the Unit has a Unit Safety Case)

Hazards for the DIGBY South Extension were identified and analysed using the following process:

- A review of the existing Euroville hazards as documented in the Euroville Hazard Log [5] to identify those hazards that may be impacted by DIGBY South airspace development, and to determine the severity of the change;

- A Hazard Analysis of DIGBY South specific Extension hazards with support from Euroville Operations [4], to determine mitigating safety requirements.

Risk classification was determined using the risk classification tables contained within Euroville Safety Management System [1].

5.2 Risk Assessment and Mitigation Process (Option 2 – when no Unit Safety Case is available)

Hazards for the DIGBY South Extension were identified and analysed using the following process:

- A Preliminary Hazard Identification for DIGBY South specific Extension hazards with support from Euroville Operations [6], to determine the severity of the change.

- A Hazard Analysis of DIGBY South specific Extension hazards with support from Euroville Operations [4], to determine mitigating safety requirements.

Risk classification was determined using the risk classification tables contained within Euroville Safety Management System [1].

5.3 Severity Classification Scheme

The Euroville SMS uses the severity classes defined in the ESARR4. Table 1 below shows the scheme used and copied from Figure A-1 from ESSAR 4.

Table 1 – ESARR 4 Severity Classification Scheme

Severity Class	1 [Most Severe]	2	3	4	5 No safety effect [Least Severe]
Effect on Operations*)	Accidents	Serious Incidents	Major Incidents	Significant Incidents	No Immediate effect on safety
Examples of effects on operations include*):	❑ one or more catastrophic accidents, and or more mid air collisions ❑ one or more collisions on the ground between two aircraft ❑ one or more Controlled Flight Into Terrain ❑ total loss of flight control. No independent source of recovery mechanism, such as surveillance or ATC and/or flight crew procedures can reasonably be expected to prevent the accident(s).	❑ large reduction in separation (e.g. a separation of less than half the separation minima), without crew or ATC fully controlling the situation or able to recover from the situation ❑ one or more aircraft deviating from their intended clearance, so that abrupt manoeuvre is required to avoid collision with another aircraft or with terrain (or when an avoidance action would be appropriate)	❑ large reduction (e.g. a separation of less than half the separation minima) in separation with crew or ATC controlling the situation and able to recover from the situation. ❑ minor reduction (e.g. a separation of more than half the separation minima) in separation without crew or ATC fully controlling the situation, hence jeopardising the ability to recover from the situation (without the use of collision or terrain avoidance manoeuvres).	❑ increasing workload of the air traffic controller or aircraft flight crew or slightly degrading the functional capability of the enabling CNS system ❑ minor reduction (e.g. a separation of more than half the separation minima) in separation with crew or ATC controlling the situation and fully able to recover from the situation	No hazardous condition i.e. no immediate direct or indirect impact on the operations.

As agreed with the NSA, this severity classification scheme has been developed further and documented in the Euroville SMS [1] in the form of a risk classification scheme to assign tolerable probabilities to the ESARR 4 severities. This risk classification scheme has been used to assess the severity of the hazards associated with the changes to DIGBY South Airspace.

5.4 Unit Hazard Review and Assessment (Option 1)

The following Euroville Hazards were identified from the Euroville Hazard Log [5].

2a	**Traffic Management – Airspace Capacity Regulation**				
EV-SO-201	2a Airspace Design	Provision of inappropriate or inadequate Airspace Design	To one or more sectors	Class 4[1]	Remote[2]

5.5 Unit Hazard Review and Assessment (Option 2)

The following hazard was identified during the Preliminary Hazard Identification [6] for DIGBY South specific Extension:

- Inadequate design of the DIGBY South Airspace Extension may result in an increase in controller workload possibly leading to a minor reduction in separation.

5.6 Change Severity Rationale (Option 1)

From the review of the Euroville Hazard Log it can be seen that DIGBY South extension impacts a Class 4 hazard. As the maximum severity of hazard is Class 4 (significant Incidents) the change associated with the Euroville DIGBY South airspace re-sectorisation falls in to the MINOR change category (as per 1315/2007).

5.7 Change Severity Rationale (Option 2)

The results of the PHI [6] show that DIGBY South extension may lead to a severity class 4 hazard and therefore falls in to the MINOR change category (as per 1315/2007).

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[1] Class 4 according to 2096/2005 means – significant incident involving circumstances indicating that an accident, a serious or major incident could have occurred, if the risk have not been managed within the safety margins, or if another aircraft had been in the vicinity.
[2] As per the Safety Objective Classification Scheme (SAM – FHA)

6. EUROVILLE HAZARD REVIEW

6.1 Unit Safety Objectives

The objective derived from the hazard is:

- The probability of provision of inappropriate or inadequate Airspace Design to shall be no greater than Remote.

6.2 Integrity Safety Requirements

No Integrity Safety Requirements have been derived for the DIGBY South Extension, as the engineering changes remain within the existing design envelope.

7. DIGBY SOUTH HAZARD ANALYSIS (HA)

7.1 Introduction

A specific DIGBY South Hazard Analysis (HA) [7] was conducted to support the airspace changes.

The hazards were identified and assessed by the people listed in Table 2, and recorded in the P1234 Hazard Log.

Table 2 – DIGBY South HA Participants

Name	Discipline
Don Ponting	Euroville Centre ATC Procedures
Ricky Bradman	Euroville Centre ATC Procedures
David Hughes	ATM Planning
Merv Boon	Safety Specialists (Co-ordinator)

The results of the HA are recorded in the DIGBY SOUTH Hazard Log [4].

The following types of requirements were derived to mitigate the hazards:

1. General Safety Requirements, and,
2. Functional and Performance Safety Requirements.

A summary of these requirements is provided below.

7.2 General Requirements

The following functional and performance requirements have derived to assure the safety of the DIGBY South Airspace extension:

Table 3 – General Safety Requirements

Reference	General Safety Requirements
DS-GR1	Euroville Centre Supplementary Instructions (SIs) shall reflect the DIGBY South Extension availability
DS-GR2	The ATC Procedure Safety Assessment Process (Procedure ATC3 from Euroville SMS) shall be applied to ATC Instructions.
DS-GR3	SIs shall reflect use of Blocking strips to ensure ATC controlled aircraft are not positioned into DIGBY South airspace when it is not available.
DS-GR4	The LoA between Euroville and Military shall include activation / notification details
DS-GR5	Euroville Centre ATC Instructions shall reflect DIGBY South Extension availability and activation procedures
DS-GR6	The Euroland AIP shall be updated to reflect the DIGBY South Extension airspace changes and reviewed by the Euroville Centre ATC representatives.
DS-GR7	Briefings and ATC Instructions shall identify to Euroville Centre controllers the need to monitor military operations when aircraft are at FL200 in the DIGBY South airspace.
DS-GR8	Euroville shall liaise with CFMU ENV to ensure that CFMU systems and information have been updated as necessary.

7.3 Functional Performance Safety Requirements

The following functional and performance requirements have derived to assure the safety of the DIGBY South Airspace extension:

Table 4 – Functional and Performance Safety Requirements

Reference	Functional & Performance Safety Requirements
DS – FPR1	Records shall be kept to demonstrate that the necessary ATC staff have been briefed on the DIGBY South Extension procedures.
DS – FPR2	The Support Information System shall reflect DIGBY South Extension availability
DS – FPR3	Maps at sector CWP shall reflect DIGBY South Extension availability
DS – FPR4	DIGBY South Extension Airspace and times of operation shall be marked on Visual Flight Rules (VFR) charts.
DS – FPR5	STCA functionality shall be enabled in the DIGBY South airspace. E.g. STCA parameters tested for the DIGBY South extension.[3]
DS – FPR6	All necessary changes shall be tested and implemented, and results documented, at or before Operation date in accordance with established processes and procedures.
DS – FPR7	Surveillance coverage shall be assessed to identify any shortcomings in coverage provision and mitigation developed as appropriate.
DS – FPR8	Frequency coverage checks shall be carried out for Electromagnetic compatibility of the Documented Operational Coverage in the DIGBY South extension during routine flights. i.e. the frequencies are not interfering.

[3] Safety Net is not a safety requirement per se. However in this case we ought to verify and test that parameterisation for the airspace change will not downgrade the level of safety.

8. REFERENCES

1. Euroville Safety Management System, Intranet, Current Version.
2. ESAAR1
3. ESARR4
4. DIGBY South Hazard Log, P1234/HAZLOG/01, Issue 3
5. Euroville Centre Hazard Log, EC/HAZLOG/01, Issue 12
6. DIGBY South PHI, P1234/PHI/01, Issue 4
7. DIGBY South Hazard Analysis Process (HA), P1234/HA/01, Issue 2

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