

CONSULTATION PAPER
PBN Implementation and transition
PLAN for Belgium - 2024/2030

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Table of Contents

1	Introduction.....	2
2	Implementation objectives and planning.....	4
2.1	Overview.....	4
2.2	Medium-term part up to January 2024 – PBN Compliant environment.....	4
2.2.1	Aerodromes concerned.....	4
2.2.2	PBN compliance.....	4
2.2.3	Deviations from the Implementing Regulation.....	6
2.2.4	Fleet capabilities.....	6
2.2.5	Navigation infrastructure evolution.....	6
2.2.6	Provisions for non-PBN capable users.....	7
2.3	Long-term part up to June 2030 – Full PBN environment.....	7
2.3.1	Aerodromes concerned.....	7
2.3.2	Phase 1: withdrawal of conventional procedures.....	7
2.3.3	Phase 2: redesign of procedures.....	7
2.3.4	Navigation infrastructure evolution.....	8
2.3.5	Provisions for non-PBN capable users.....	8
3	Reply submission and deadline.....	8

1 Introduction

ICAO Resolution 37/11 urges all States to implement RNAV and RNP air traffic services (ATS) routes and approach procedures in accordance with the ICAO PBN concept as laid down in the performance-based navigation (PBN) Manual (Doc 9613).

ICAO Doc 9750, the Global Air Navigation Plan (GANP) is described as ICAO's highest air navigation strategic document and the plan to drive the evolution of the global air navigation system. The GANP identifies PBN as the highest priority and outlines implementation issues involving PBN planning and implementation as part of the Aviation System Block Upgrades (ASBUs).

The following legislation requires that ECAC States implement PBN operations:

- **EU Regulation 716/2014 (PCP IR)** – Establishment of the Pilot Common Project (PCP) supporting the implementation of the European Air Traffic Master Plan.
 - This regulation applies to EBBR.
- **EU Regulation 2018/1048 (PBN IR)** – Airspace usage requirements and operating procedures concerning performance-based navigation (PBN).
 - This regulation applies to the airspace of the Belgian part of the FIR EBBU and following airports: EBAW, EBBR, EBCI, EBKT, EBLG, and EBOS.

Both Commission regulations require PBN operations to become the norm in all flight phases in a phased approach starting in 2020 for completion by 2030 or earlier. Additionally, GNSS becomes the primary positioning source to be used by 2030, with other (ground-based) NAVAIDs relegated to secondary role.

The present document is meant to initiate the consultation process on the “PBN Implementation and Transition PLAN for Belgium – 2024/2030” as required by the corresponding European Union (EU) Implementing Regulation (IR). (PBN IR, EU Regulation 1048/2018 and PCP IR, EU Regulation 716/2014)

The content of this paper has already been submitted to all members of the Belgian PBN Implementation Group (PBNIG), and has been updated to cater with all their remarks and comments. It serves as a companion document to the “PBN Implementation and Transition PLAN for Belgium – 2024/2030”.

All addressees are kindly asked to comment and formally approve the submitted document and plan.

2 Implementation objectives and planning

2.1 Overview

The Transition Plan we are proposing follows the EU Performance Based Navigation Implementing Regulation (CIR (EU) 2018/1048) and the Pilot Common Project (CIR (EU) 2014/716) requirements for creating first a “**PBN Compliant**” environment not later than January 2024. This is to be followed by a “**Full PBN**” environment not later than June 2030.

Accordingly, our Transition Plan is split into two parts: a medium-term part extending to January 2024 and a long-term part, extending to June 2030.

2.2 Medium-term part up to January 2024 – PBN Compliant environment

2.2.1 Aerodromes concerned

The following civil aerodromes located in the Belgian part of the Brussels FIR shall form a PBN compliant environment by January 2024 at the latest:

- Antwerpen – EBAW
- Brussels – EBBR
- Charleroi – EBCI
- Kortrijk – EBKT
- Liège – EBLG
- Oostende – EBOS

As there is already a PBN mandate for EBBR, EBCI and EBLG, skeyes has decided to work in 2 phases:

- Phase 1 with target date 27th of January 2022: EBBR, EBCI and EBLG
- Phase 2 with target date 22th of January 2024: EBAW, EBKT and EBOS

2.2.2 PBN compliance

The current PBN-status in the Belgian part of the Brussels FIR is described in the Plan.

In addition to the current PBN-status, PBN compliance at the aerodromes listed in §2.2.1 is to be achieved by implementing following elements for each instrument runway end (IRE) – non exhaustive list:

- RNAVI STAR (all)
- RNAVI Holding
- RNP APCH with LNAV, LNAV/VNAV and LPV minima with RNAVI missed approach
- RNAVI transition to conventional final approach segment (ILS)
- RNAVI missed approach after conventional final approach segment (ILS)
- RNAVI SID (from each IRE)
- RNAVI replaced by RNP1+RF if proven additional benefits for SIDS and STARS (for EBBR only)

The Plan does not prevent implementation of other PBN-applications (e.g. rotorcraft routes) when the need for them arise. Airborne capability will be a key factor in determining their adoption.

In addition to the PBN-compliant procedures, following procedures will remain available:

- Conventional final approach: ILS CAT I and CAT II/III approach as primary means of navigation into each precision approach runway
- Conventional non precision approach (NPA) into each IRE as secondary means of navigation (where no ILS is available)

As a result, for each IRE, two instrument approaches will be provided: one GPS-dependent, and one independent of GPS.

The plan is based on the following considerations:

- PBN procedures are designed to the maximum possible extent as overlays of the conventional procedures but will gradually be redesigned to reflect more the current operations (e.g. 'as vectored').
- Conventional base turn procedures starting at the IAF above the aerodrome (all except EBBR) cannot be duplicated in RNAVI and will be redesigned into RNAVI transitions to final
- The preferred method of navigation for approach operations shall be primarily ILS, followed by RNP APCH and thirdly the conventional NPA.
- RNP approaches with LPV minima shall be compliant with SBAS CAT I minima wherever possible.

- The target navigation specification for departures, arrivals and holding shall be RNAVI. RNP1 may be considered whenever required, and the airborne capabilities make an implementation possible.

2.2.3 Deviations from the Implementing Regulation

The following deviations from the applicable Implementing Regulation are proposed:

- In EBBR instead of RNP1+RF, RNAVI SID and STAR
- All STAR and SID PBN compliant by 2024 (not only one)
- ILS CAT I remains the primary means for instrument approach until 2030 (at least)

2.2.4 Fleet capabilities

Current PBN-capabilities of flights operating in/out the affected aerodromes are outlined in the Plan.

In order to endure that the fleets concerned are appropriately equipped by the January 2024 deadline, an RNAVI Mandate is proposed for all IFR GAT flights inbound and outbound to/from these aerodromes: EBAW, EBKT and EBOS (in addition to the one which already exists for EBBR, EBCI and EBLG).

2.2.5 Navigation infrastructure evolution

The following actions are proposed in respect of the navigation infrastructure:

- A Minimum Operational Network (MON) based on VOR/DME/ILS is to be maintained to provide a fallback in case of GNSS outage during the transition period and beyond. The purpose of the MON is to provide an OPTIMUM basic navigation capability independent of GPS at NATIONAL level. The Plan contains the elements of the MON as proposed to and discussed within the PBNIG since 2010. Deviations, although resulting in a reduced operational redundancy, may be considered.
- Phase out/extinct all NDBs most likely not before 2024
- Phase out/extinct all VORs most likely not before 2024, except those required for the MON. It is proposed to keep the VOR-stations ANT, BUB, COA, GSY and SPI.
- Maintain/optimize an adequate DME network to support RNAVI operations.

- Keep all ILS installations until 2030 (at least).

2.2.6 Provisions for non-PBN capable users

Maintain conventional procedures for the benefit of non-PBN capable users. PBN mainly affects IFR GAT-operations. It does not affect either VFR-flights and/or OAT.

2.3 Long-term part up to June 2030 – Full PBN environment

2.3.1 Aerodromes concerned

The following aerodromes located in the Belgian part of the Brussels FIR shall form the full PBN environment by June 2030 at the latest:

- Antwerpen – EBAW
- Brussels – EBBR
- Charleroi – EBCI
- Kortrijk – EBKT
- Liège – EBLG
- Oostende – EBOS

2.3.2 Phase 1: withdrawal of conventional procedures

The withdrawal of conventional procedures happens in parallel with the phasing out of VORs, NDBs (and Locator Beacons). At the same time, impacted SIDs and STARs are also withdrawn. The impacted final approaches relying on these nav aids, are also withdrawn. Note that ILSs will remain in service.

2.3.3 Phase 2: redesign of procedures

The PBN related Instrument Flight Procedures (IFP) have been overlays of the conventional procedures and as such, did not necessarily fully realize the potential benefits of performance-based navigation. In Phase 2 of the establishment of the full PBN environment, the original overlay procedures should be redesigned so that they may provide all the possible benefits of PBN.

Rationale for this two-step implementation: the structure of the airspace, especially at the regional airports, does not allow rapid deployment of RNP-approaches, taking advantage of all their inherent possibilities. This is because changing the existing airspace structure is a quite lengthy process. Moreover, the dual traffic situation with aircraft capable and not capable of flying them, led to the current situation. It is assumed that a re-design of the

(regional) airspaces will be easier to be performed once virtually all flights will be capable of flying RNAVI and RNP-approaches.

2.3.4 Navigation infrastructure evolution

The activities started under the medium-term part of the Plan are to be completed as early as practicable.

2.3.5 Provisions for non-PBN capable users

In this part of the plan, minimal conventional procedures or radar vectoring shall still be available for non-PBN capable users. We need to be able to supports flights not covered by the quoted EU-regulations for PBN 2.3.5, i.e. State aircraft.

3 Reply submission and deadline

Please send your reply by electronic mail to:

pbn.consultation@skeyes.be

We would appreciate a reply at your earliest convenience, but in any case not later than the 30th of November.