



## Technical paper

# Safe operations of Brussels Airport runways

## June 08 BeCA recommendations

Following the Kalitta accident and referring to our Position Paper of April 2006 and to the IFALPA safety bulletin of July 2005, BeCA recommends.

As a standard operation aircraft should always land and take-off into the wind. Airports may have main runways (Preferential Runway System) which are better suited than others because of runway length, obstacles in the approach and departure path, equipment, capacity, lack of crossing with other runway. Therefore the use of a main runway is acceptable even with some tailwind or crosswind because overall safety would still be better than using another runway into the wind. In Brussels, this is 25L/R.

In this case acceptable tailwind and crosswind should be limited to 5/15 kts respectively, gusts included (ICAO recommendation).

In a preferential runway system there is only one runway (or set of parallel runways) that can be used as a preferential runway even with some unfavourable wind because overall safety will still be enhanced. It is impossible that, depending of the day of the week and the hour of the day, other runways are selected as preferential runway just for the purpose of noise "dispersion" as this obviously degrades the safety.

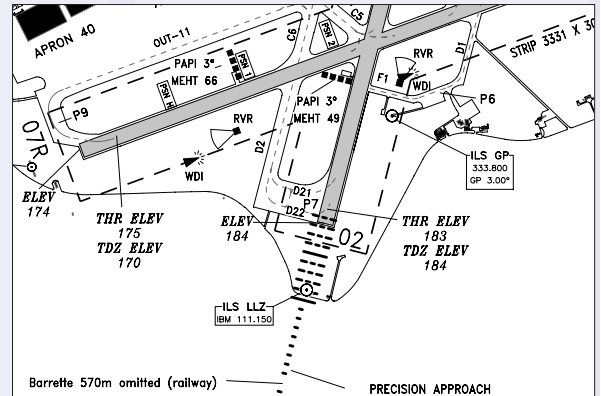
Furthermore the use of take-off and landing runways into the wind would reduce the overall noise. Tailwind does cause more noise because aircraft taking off use more power, stay lower and as a result need more distance to reach a certain altitude.

### Use of 02/20

Runways 02/20 (shorter runways, crossing other runways) should only be used as an "escape" runway in case of strong northerly and southerly winds and 25L/R or 07L/R cannot be used due to exceeding crosswind limits. In this case we need runway 02/20 to stay operational. Runways 02/20 should not be part of a noise Preferential Runway System and in no case the use of crossing runways 20/25R and 02/07R should be used for those purposes. The use of crossing runways significantly enhances the risk of collisions. If runway 02 or 20 is used, both landing and take-off should be from this runway.

### Use of 07L/R

In order to enhance the safety and reduce the overall noise, the installation of an ILS on 07L is a must. With the installation of an ILS on 07L, runways 07L/R could be used as an equivalent alternative for 25L/R in case of easterly winds. This would result in safer operations (less tailwind, no crossing runways), less noise and a better spreading of the noise.



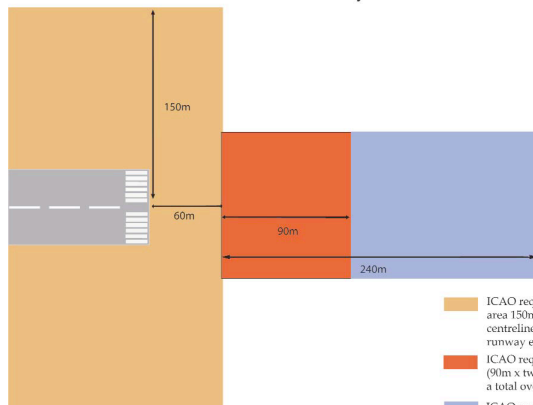
240m (together with the 60m strip this provides 300m overrun available). This will dramatically reduce the chances of a post overrun fire and the risk of major injuries and death for passengers, crews, airport staff and passers-by.

In case an adequate RESA cannot be constructed due to the location of the runway and the surrounding terrain, an Engineered Materials Arresting System (EMAS) should be installed. An EMAS is an arrestor bed of

### Extended RESA or EMSA:

The runway strip, which is flat, firm and free of non-frangible obstructions, is an area that must extend a minimum of 150m either side of the runway centreline and at least

RESA Dimensions Code 3 and 4 Runways



- ICAO required runway strip area 150m either side of the centreline (where practical) and 60m beyond the runway end
- ICAO required minimum RESA (90m x twice runway width giving a total overrun of 150m)
- ICAO recommended minimum RESA (240m x twice runway width giving a total overrun of 300m) IFALPA believes that this recommendation should be upgraded to a Standard

60m beyond the end of the runway. The RESA (Runway End Safety Area) is an area that extends a minimum of 90m beyond the end of the runway strip and with twice the width of the runway. Analysis of data from runway overrun events has shown that in most cases aircraft leave the runway surface at speeds of less than 70kts and come to a complete stop within 300 m of the runway end. ICAO recommends a minimum RESA of

crushable concrete blocks which works by transferring the energy from an overrunning aircraft into the action of crushing the concrete system.

In the Kalitta case, runway 20 is equipped with a RESA of 107m (i.o. 240m recommended by ICAO). This RESA seemed insufficient to stop the B747.