

WIND TURBINE CONSULTATION MAP LEGEND

The skeyes Wind Turbine Consultation Map offers wind turbine developers an insight into the possibilities of their project(s) with regard to the technical installations, operations and flight procedures under the responsibility of skeyes.

DISCLAIMER

The *Wind Turbine Consultation Map* reflects the 'as is' situation of November 2020. Please always check the skeyes website for the latest version.

This map shows which type of assessment is required. An assessment of the installation of wind turbines against this map and reference criteria never replaces the preliminary or official advice of skeyes. Following the established procedure a request always has to be submitted with the Urbanism service (urba@skeyes.be) or the Belgian Civil Aviation Authority (DGLV/DGTA).

The Wind Turbine Consultation Map is drawn up for wind turbines with a maximum tip height of 210 m. For larger turbines, as well as for wind farms as from 20 turbines (including turbines that have already been built and/or licensed) or for a cluster with a possible cumulative effect depending on the location with regard to the installations and procedures, an ad hoc assessment will always be necessary.

Important:

- Y There is no specific formula regarding height, number and location on the basis of which it can be predicted whether and how many turbines can be allowed in the vicinity of a radar without them having an (inadmissible) impact on aviation.
- Y The blades are always taken into account when evaluating the possible impact of the wind turbine. If the blades enter a certain zone (orange, red, hatched,...), the entire wind turbine is analysed on the basis of the entered zone.
- Y Each request shall be examined taking into account the already licensed and built wind turbines, as well as requests for which a positive preliminary opinion has been given, in order to calculate the possible cumulative effect of a cluster of turbines.
- Y If the decision to build wind turbines is taken against the negative opinion of skeyes, the latter cannot be held responsible for any consequences. skeyes

reserves the right to have the turbines adjusted or removed in the event of nuisance. This in order to be able to continue to guarantee the safety of air traffic.

In its advice, skeyes will, where possible, provide mitigating solutions (adjustment of height, number or location) or invite the developer for consultation.

PROCESS

The Urbanism service receives, processes and evaluates all applications, communicates with the interested parties and delivers the reasoned opinions.

Each request for advice for wind turbines is analysed for its potential impact on the technical installations (including those for communication, navigation and surveillance) that skeyes manages. In addition, it shall be verified whether the wind turbines' construction at the requested location does not disrupt operations or flight procedures at the airports that skeyes controls.

For the evaluation of the files, the Urbanism service will, if necessary, call upon the competent experts from the PANS-OPS, Operations and the services responsible for communication, navigation, surveillance and meteorological systems.

TYPE STUDY

The map shows per zone which type of study is necessary and where wind turbines cannot be admitted for safety reasons. The reference criteria are shown on the map in colour (contoured, hatched and coloured zones). Criteria of installations and procedures may overlap. It is not possible to show these overlaps visually, the most stringent criterion is shown on the map in such cases.

The reference criteria that skeyes uses are based on existing ICAO regulations, studies commissioned by skeyes, international studies that skeyes participated in (carried out, inter alia, on behalf of Eurocontrol), international guidelines, exchange of information in different fora in which skeyes actively participates (ICAO, Eurocontrol, etc.), experience of other air navigation services (ANSPs) and skeyes' own experience.

Legend:

- Y Light grey zones: in these zones a simple internal study will be carried out. This applies to the installation of a limited number of wind turbines (< 20) of a

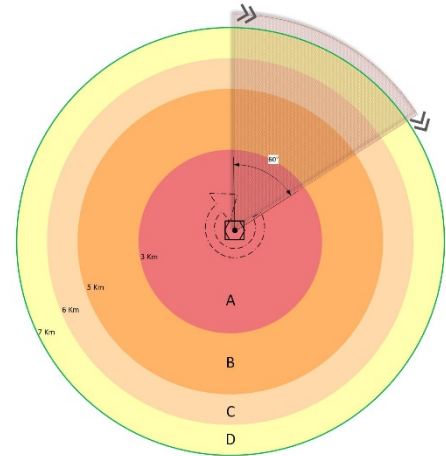
maximum height of 210 m and depends on the location with regard to the installations and procedures (including MSA, Minimum Sector Altitude) of skeyes.

- Y Orange zones: In these zones there is always an impact on the installations used and/or operations carried out by skeyes. To this end, a more extensive study needs to be carried out.
- Y The outline of the orange zone indicates which equipment or operations need to be protected. As far as visually possible, it shows where different restrictions overlap.
 - orange contours: protection of the CTR including a 1.5 NM buffer.
 - yellow contours: protection of the RMZ including a 1.5 NM buffer.
 - blue contours: PANS-OPS box (at 55 km of the ARP or Aerodrome Reference Point).
 - green contours: protection of DVOR/RDF (Nav aids) (see also below).
 - pink contours: protection of the (primary and/or secondary) radar in a 10-16 km radius around the radar. In almost all cases, primary and secondary radars are physically placed on top of each other. It is always necessary to carry out an external study for this zone.
- Y Hatched blue zones: PANS-OPS zones, 15 km from the ARP (Aerodrome Reference Point). In these zones, there is always an impact on operations. To this end, a more extensive study should be carried out.
- Y Red zones: in those zones there is an unacceptable impact of the wind turbines on the installations used and/or operations carried out by skeyes. As a result, no turbines can be authorised in these zones.
 - green contours: in the zone within a 0-3 km radius around the DVOR and RDF no wind turbines are allowed.
 - pink contours: in the zone within a 0-10 km radius of the (primary and/or secondary) radars no wind turbines are allowed. For establishing this no-go zone skeyes bases itself on numerous external studies that show that neither positive opinions nor mitigating solutions are possible.
Exception: for wind turbines with a maximum tip height of 70 m in this zone, skeyes will carry out an internal analysis to examine the possibilities.

- purple contours: wind turbines are not permitted in the zone within a 0-1 km radius around the NDB.

Y Detailed criteria for the DVOR and RDF (see also the drawing alongside):

- distance (WT-DVOR/RDF) < 3 km: no wind turbines are allowed (red zone A).
- distance (WT-DVOR/RDF) 3 - 7 km and per 60° sector where the North serves as a reference point:
 - o in the 3 – 5 km zone (zone B) a maximum of 14 wind turbines is allowed per 60° sector. They may also be located in zones C and D.
 - o in the 5 – 6 km zone (zone C) and when there are no wind turbines in zone B, a maximum of 16 wind turbines is allowed per 60° sector. These wind turbines can also be located in zone D.
 - o in the 6 – 7 km zone (zone D) and when there are no wind turbines in zone B and C, a maximum of 18 wind turbines is allowed per 60° sector;
- distance (WT-DVOR/RDF) > 7 km: no restriction by the DVOR/RDF.



Abbreviations

EBAW Antwerp International Airport
 EBBR Brussels Airport
 EBCI Brussels South Charleroi Airport
 EBKT Kortrijk-Wevelgem International Airport
 EBLG Liege Airport
 EBOS Ostend-Bruges International Airport

External and ad-hoc studies.

For each request of wind farms as from 20 wind turbines (including those already built, licensed and with a favourable preliminary opinion) or for a cluster of turbines with a possible cumulative effect depending on the location with respect to the installations and procedures (e.g. near a CTR), a more detailed study is necessary. On the basis of the application, skeyes will determine which aspects need to be analysed in detail and whether the study should be carried out by skeyes or by an external agency.

skeyes will always determine the content of the external studies and evaluate them afterwards. Where appropriate, skeyes may consult with Defence for the evaluation of these external studies.