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Runway Performance Report **2023**

OSTEND-BRUGES INTERNATIONAL

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Runway performance report

Ostend–Bruges International

EXECUTIVE SUMMARY

The global aviation industry is experiencing a swift resurgence and throughout Europe traffic levels of 2019 are being reached. Remarkably, Ostend–Bruges International Airport had almost surpassed 2019 traffic since 2021. Despite this positive trajectory, the year 2023 witnessed a substantial decline in traffic, primarily attributed to a notable decrease in VFR (Visual Flight Rules) activity compared to the preceding year. This report gives an overview of Air Traffic Management (ATM) performance in Ostend–Bruges International Airport.

ATM performance is driven by four Key Performance Areas (KPAs): safety, capacity, environment, and cost-efficiency. Its aim is to provide our main stakeholders and anyone of interest with traffic figures for 2023 and relevant data on the performance of our operations at Ostend–Bruges International Airport, namely on three of the four KPA's: safety, capacity and punctuality, and environment.

Traffic

Traffic in Ostend-Bruges International Airport in 2023 is higher than in 2020. Skeyes controlled 22,598 movements at Ostend-Bruges Airport, a decrease of -11% compared to 2022. Instrument flight rules (IFR) traffic saw a slight decrease: -1% compared to 2022 but stays 7% above 2019. Visual flight rules (VFR) traffic account for the majority of traffic (approximately 60% of the total) at Ostend–Bruges International Airport in 2023. Although, there is a 17% decrease in VFR traffic compared to last year. The main cause of the decrease is attributed to the decline in training flights. One major change at Ostend-Bruges International Airport is the increase in cargo traffic since the COVID-19 crisis (cargo as defined in the EUROCONTROL's Market Segment Rules, not taking into account cargo moved in the hull of passenger aircraft). While there is a decrease in cargo traffic compared to 2022, it is still almost doubled from 2019. This decrease in market share is mostly influenced by the sudden departure of Qatar Airways Cargo in April 2023. As for the traffic patterns, there is a decrease from 15:00 to 23:00 compared to 2022, and a decrease in night-time traffic compared to 2022.

Safety

Safety is an important pilar in air traffic control. As such, safety occurrences and missed approaches are followed up by skeyes' safety unit who analyses the situations, trends, and - when relevant - investigates.

The number of missed approaches, a procedure used when the approach cannot be continued for a safe landing, and particularly their cause can indicate which measures are to be taken to improve the safety of air navigation service provision. In 2023, 22 missed approaches were logged. The rate of missed approaches per 1,000 arrivals is at the same level compared to 2022. The main cause for missed approaches in 2023 were unstable approaches and aircraft arriving too close behind the preceding aircraft.

For safety occurrences, the report shows that the runway incursions increased in 2023 both runway incursions with ATM contribution and without. There were eight runway incursions in 2023, two of which had ATM contribution. Other incidents on the ground decreased compared to 2022.

Capacity and Punctuality

Capacity is one of the KPAs and in this report, the declared IFR capacity is given together with a view on the utilisation of the capacity. In 2023, the declared capacity was exceeded on 5 occasions. On all of these occasions, an increased amount of touch-and-goes were performed.

While there is no annual target with regard to Air Traffic Flow Management (ATFM) arrival delay for Ostend–Bruges International Airport, skeyes registers the arrival ATFM delays, as part of a continuous monitoring of the Air Navigation Service Provider's (ANSP) performance. In 2023, due to a bomb threat, an ATFM regulation was put in place causing 38 minutes of delay. From a passenger or airport perspective, however, delays are observed more frequently than this. In fact, every departure or arrival can be affected by ATFM regulations placed in other parts of the Belgian airspace, by other countries in whose airspaces the aircraft flies through, or by the airport of arrival, possibly also in another country. As traffic increased in all of Europe, so did the amount of ATFM delays. In 2023, flights landing in Ostend–Bruges International Airport experienced a total of 9,388 minutes of ATFM delay, of which 233 were due to skeyes' regulations. Flights taking off from Ostend–Bruges International Airport totalled 10,068 minutes of ATFM delay: 131 minutes were attributable to skeyes' en-route regulations.

Environment

In 2023, the Preferential Runway System (PRS) in place at night at Ostend–Bruges International Airport was complied with by 78% for departures and 51 % for arrivals. In total, 66% of the movements used the PRS.

This report highlights night movements as well, revealing a noteworthy reduction from 3:00 to 6:00 Local Time in 2023. This decline primarily stems from the sudden departure of Qatar Airways Cargo and a transition in the movement pattern from nighttime to daytime for EgyptAir Cargo.

SAMENVATTING

De wereldwijde luchtvaartindustrie beleeft een snelle heropleving en in heel Europa worden de verkeersniveaus van 2019 bereikt. Opmerkelijk is dat de internationale luchthaven van Oostende-Brugge het verkeersvolume van 2019 sinds 2021 bijna had overtroffen. Ondanks dit positieve traject stond het jaar 2023 in het teken van een substantiële daling van het vliegverkeer, die voornamelijk toe te schrijven was aan een opmerkelijke implosie van de VFR-activiteit (Visual Flight Rules, zichtvliegvoorschriften) ten opzichte van het voorgaande jaar.

Dit verslag biedt een overzicht van de prestaties inzake luchtverkeersbeheer (Air Traffic Management, ATM) op de internationale luchthaven van Oostende-Brugge. Die prestaties worden bepaald door vier prestatiekerngebieden (KPAs, Key Performance Areas): veiligheid, capaciteit, milieu en kostenefficiëntie. Het verslag beoogt aan onze belangrijkste stakeholders en belangstellenden de verkeerscijfers voor 2023 en relevante data over de prestaties van onze activiteiten op de internationale luchthaven van Oostende-Brugge te verstrekken, namelijk over drie van de vier prestatiekerngebieden: veiligheid, capaciteit en stiptheid en milieu.

Verkeer

Het verkeer op de internationale luchthaven van Oostende-Brugge lag in 2023 hoger dan in 2020. skeyes controleerde 22.598 bewegingen op de luchthaven van Oostende-Brugge, goed voor een daling met -11% ten opzichte van 2022. Het IFR-verkeer (Instrument Flight Rules, instrumentvliegvoorschriften) ging er licht op achteruit: -1% ten opzichte van 2022, maar +7% boven dat van 2019. Het verkeer volgens zichtvliegvoorschriften (VFR) vertegenwoordigt het merendeel van het verkeer (ongeveer 60% van het totaal) op de internationale luchthaven van Oostende-Brugge in 2023. Niettemin loopt dat type verkeer terug met -17% in vergelijking met het voorgaande jaar. De belangrijkste oorzaak daarvan moet worden toegeschreven aan de daling van het aantal trainingsvluchten. Een belangrijke verandering op de internationale luchthaven van Oostende-Brugge is de groei in het vrachtverkeer sinds de COVID-19-crisis (vracht zoals gedefinieerd in de Market Segment Rules van EUROCONTROL, waarbij geen rekening wordt gehouden met vracht die wordt getransporteerd in de romp van passagiersvliegtuigen). Het vrachtverkeer mag dan wel afgenomen zijn in vergelijking met 2022, het bedraagt nog altijd bijna het dubbele van de cijfers uit 2019. Dat afkalvend marktaandeel wordt vooral beïnvloed door het plotse vertrek van Qatar Airways Cargo in april 2023. Wat de verkeerspatronen betreft, is er een afname van 15.00 tot 23.00 uur vergeleken met 2022, en een afname van het nachtverkeer vergeleken met 2022 .

Veiligheid

Veiligheid is een belangrijke pijler in de luchtverkeersleiding. In dat verband volgt de safety unit van skeyes veiligheidsvoorvallen en afgebroken naderingen op om situaties te analyseren, trends in kaart te brengen en, zo nodig, grondig onderzoek te verrichten.

Het aantal afgebroken naderingen (een procedure die wordt gebruikt wanneer de nadering niet kan worden voortgezet met het oog op een veilige landing), en in het bijzonder de oorzaak ervan, kunnen aangeven welke maatregelen moeten worden genomen om de luchtvaartnavigatiedienstverlening veiliger te maken. In 2023 werden 22 afgebroken naderingen geregistreerd. Het aantal afgebroken naderingen per 1.000 aankomsten bleef op hetzelfde niveau als 2022. De belangrijkste oorzaak voor afgebroken naderingen in 2023 waren de onstabiele naderingen en het te dicht aankomen van een vliegtuig achter het voorgaande.

Wat de veiligheidsvoorvallen betreft, toont het verslag aan dat de runway incursions, zowel met als zonder ATM-bijdrage, in 2023 zijn toegenomen. Er deden zich acht runway incursions in 2023 voor, waarvan twee met ATM-bijdrage. Andere incidenten op de grond daalden in vergelijking met 2022.

Capaciteit en stiptheid

Capaciteit is een van de prestatiekerngebieden en in dit verslag wordt de opgegeven IFR-capaciteit aangeduid, samen met een overzicht van de mate waarin die capaciteit benut wordt. In 2023 werd de opgegeven capaciteit 5 keer overschreden; in al die gevallen werd een groter aantal touch-and-goes uitgevoerd.

Hoewel er voor de internationale luchthaven van Oostende-Brugge geen jaardoelstelling vastgelegd is, registreert skeyes, in het kader van een permanente monitoring van zijn prestaties als luchtvaartnavigatiedienstverlener, de ATFM-vertraging (ATFM, Air Traffic Flow Management) bij aankomst. In 2023 werd vanwege een bommelding een ATFM-regulering ingevoerd die 38 minuten vertraging veroorzaakte. Vanuit het oogpunt van de passagier of de luchthaven worden echter vaker vertragingen waargenomen. In feite kan elk vertrek of elke aankomst worden getroffen door ATFM-reguleringen in andere delen van het Belgische luchtruim, in het luchtruim van andere landen dat het vliegtuig doorkruist, of op de luchthaven van aankomst, eventueel ook in een ander land. Naarmate het verkeer in heel Europa toenam, schoot ook de ATFM-vertraging de hoogte in. In 2023 hebben aankomende vluchten op de internationale luchthaven van Oostende-Brugge in totaal 9.388 minuten ATFM-vertraging opgelopen, waarvan 233 aan skeyes' reguleringen toe te schrijven waren. Vertrekkende vluchten vanaf de internationale luchthaven van Oostende-Brugge telden in totaal 10.068 minuten ATFM-vertraging: 131 daarvan waren toe te schrijven aan en-route-reguleringen door skeyes.

Milieu

In 2023 werd het systeem van preferentieel baangebruik (Preferential Runway System, PRS) dat 's nachts op de internationale luchthaven van Oostende-Brugge van kracht is, voor 78% van de vertrekkende vluchten en voor 51% van de aankomende vluchten nageleefd. In totaal maakte 66% van de bewegingen gebruik van het PRS.

Dit verslag belicht ook de nachtbewegingen en brengt een noemenswaardige vermindering ervan – van 3.00 tot 6.00 uur (lokale tijd) – in 2023 aan het licht. Die dalende tendens komt vooral voort uit het plotse vertrek van Qatar Airways Cargo en een overgang in het patroon van de bewegingen van nacht naar dag voor EgyptAir Cargo.

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GLOSSARY

AIP: — Aeronautical Information Publication
AMC: — Acceptable Means of Compliance
AMS: — Airport Movement System
ANSP: — Air Navigation Service Provider
ARR: — Arrival
ATC: — Air Traffic Control
ATCO: — Air Traffic Control Officer
ATFM: — Air Traffic Flow Management
ATM: — Air Traffic Management
BCAA: — Belgian Civil Aviation Authority
CAA: — Civil Aviation Authority
COVID-19: — Corona Virus Disease (2019)
CRSTMP: — C-Capacity, R-Routing, S-Staffing, T- Equipment, M- Airspace Management, P
CTR: — Control Zone
DEP: — Departure
EBAW: — Antwerp International Airport
EBBR: — Brussels Airport ICAO code
EBCI: — Brussels South Charleroi Airport
EBKT: — Kortrijk Wevelgem International Airport
EBLG: — Liège Airport
EBOS: — Ostend–Bruges International Airport
FABEC: — Functional Airspace Block Europe Central
ICAO: — International Civil Aviation Organization
IFR: — Instrument Flight Rules
KPA: — Key Performance Area
MCT: — Maximum Throughput Capacity
MVT: — Mixed Volume Traffic
NM: — Nautical Mile
NOTAM: — Notice to Airmen
RAT: — Risk Analysis Tool
RMZ: — Radio Mandatory Zone
RWY: — Runway
PRS: — Preferential Runway System
UAS: — Unmanned Aircraft System
VFR: — Visual Flight Rules
Wx: — Weather

Traffic Overview
Traffic Patterns
Runway Use
Drone Activities
Cargo

TRAFFIC

In this chapter, traffic at Ostend-Bruges International Airport (International Civil Aviation Organization (ICAO) code: EBOS) is presented as recorded by the Airport Movement System (AMS). The AMS is an in-house developed tower air traffic control (ATC) system and records the movements at an aerodrome and within its Control Zone (CTR) and Terminal Control Area (TMA). The movements are defined as an aircraft either crossing the CTR or TMA, landing or taking off at the aerodrome.

The figures presented throughout the report consider a movement as a take-off or landing of all traffic (flights under Visual Flight Rules (VFR) and Instrumental Flight Rules (IFR), helicopters and airplanes, commercial, military or general aviation). As this report considers runway performance, movements such as crossings of CTRs are not considered. As per BCAA's (Belgian Civil Aviation Authority) aerodrome movement definition:

- **one take-off = one departure movement**
- **one landing = one arrival movement**
- **one touch-and-go = two movements: one departure & one arrival**

Traffic Overview

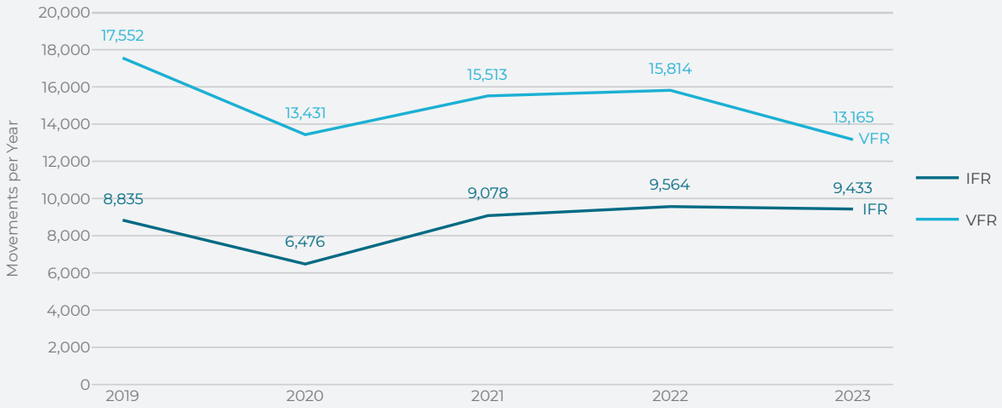
YEARLY FIGURES

The number of aircraft movements for the last five years are as follows:

2019:	**26,387**	(8,835 IFR; 17,552 VFR)
2020:	**19,907**	(6,476 IFR; 13,431 VFR
2021:	**24,591**	(9,078 IFR; 15,513 VFR)
2022:	**25,378**	(9,564 IFR; 15,814 VFR)
2023:	**22,598**	(9,433 IFR; 13,165 VFR)

Traffic records registered in Ostend–Bruges International Airport in the year 2023 are lower than 2019, 2021 and 2022. There was an overall decrease of traffic of 11% in 2023 compared to 2022 and traffic level was 14% lower than 2019, pre-COVID-19 pandemic. The evolution of IFR and VFR movements is shown in ***Figure 1.1***. Over the last five years, traffic in Ostend Airport was mainly VFR traffic.

Figure 1.1: *Historical traffic overview at Ostend-Bruges Airport*

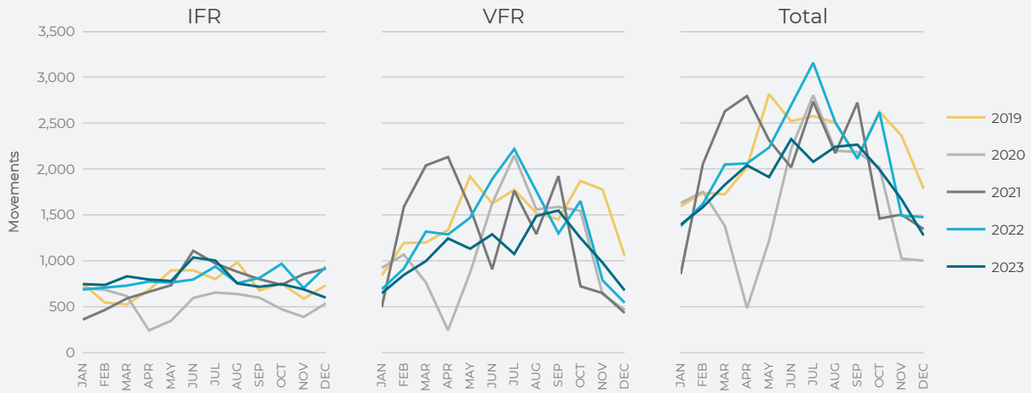


MONTHLY FIGURES

Traffic numbers and trends per month and per flight rule can be found in ***Figure 1.2*** and ***Table 1.1*** VFR flights account for the majority of traffic (approximately 60% in 2023) at Ostend–Bruges International Airport. With a decrease of 17% in VFR traffic in 2023 compared to 2022, with the highest decrease of 52% occurring in July, VFR traffic has reached its lowest point in 2023 in the last 5 years. The main cause of the decrease is attributed to the decline in training flights, notably, the number of VFR movements of Ostend Air College (a pilot school in Ostend) dropped from 5,600 movements in 2022 to 3,318 in 2023, and traffic of Noordzee Helikopters Vlaanderen decreased from 1,104 movements in 2022 to 622 in 2023.

Looking at IFR flights, there is a slight decrease of 1% in total compared to 2022. However, in comparison to 2019, traffic is 7% higher in 2023. Examining the monthly IFR movements in 2023 compared to 2022, there is a continuous increase from January to July. June shows the largest increase (+30%) with the highest number of movements throughout the year. Subsequently, there is a continuous decrease from August to December, and December exhibits the largest decrease (-36%) with the lowest number of movements for the entire year.

Figure 1.2: *Monthly Movements per Year and Flight Rule at Ostend-Bruges Airport*



In 2023, traffic in Ostend–Bruges International Airport did not yet reach the numbers of 2019, and traffic levels are even lower than 2022 and 2021. The decline was particularly significant in May, July, and October.

Table 1.1: *Monthly Movements per Year at Ostend-Bruges Airport*

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
IFR	**2019**	752	545	525	684	896	896	800	985	677	754	587	734	**8,835**
	2020	705	684	615	242	348	595	654	638	598	473	388	536	**6,476**
	2021	360	465	590	663	734	1,109	971	880	800	738	855	913	**9,078**
	2022	686	704	730	774	763	796	938	756	814	967	703	933	**9,564**
	2023	746	737	831	796	780	1,036	1,003	753	717	746	689	599	**9,433**
	2023 vs 2019	-1%	+35%	+58%	+16%	-13%	+16%	+25%	-24%	+6%	-1%	+17%	-18%	+7%
	2023 vs 2022	+9%	+5%	+14%	+3%	+2%	+30%	+7%	-0%	-12%	-23%	-2%	-36%	-1%
VFR	**2019**	842	1,194	1,199	1,335	1,919	1,623	1,774	1,519	1,452	1,869	1,775	1,051	**17,552**
	2020	923	1,068	763	244	871	1,624	2,148	1,559	1,587	1,543	636	465	**13,431**
	2021	495	1,587	2,038	2,130	1,578	908	1,762	1,291	1,922	722	648	432	**15,513**
	2022	691	915	1,318	1,286	1,469	1,889	2,217	1,751	1,298	1,650	787	543	**15,814**
	2023	647	846	997	1,243	1,131	1,288	1,074	1,488	1,547	1,248	979	677	**13,165**
	2023 vs 2019	-23%	-29%	-17%	-7%	-41%	-21%	-39%	-2%	+7%	-33%	-45%	-36%	-25%
	2023 vs 2022	-6%	-8%	-24%	-3%	-23%	-32%	-52%	-15%	+19%	-24%	+24%	+25%	-17%
Total	**2019**	1,594	1,739	1,724	2,019	2,815	2,519	2,574	2,504	2,129	2,623	2,362	1,785	**26,387**
	2020	1,628	1,752	1,378	486	1,219	2,219	2,802	2,197	2,185	2,016	1,024	1,001	**19,907**
	2021	855	2,052	2,628	2,793	2,312	2,017	2,733	2,171	2,722	1,460	1,503	1,345	**24,591**
	2022	1,377	1,619	2,048	2,060	2,232	2,685	3,155	2,507	2,112	2,617	1,490	1,476	**25,378**
	2023	1,393	1,583	1,828	2,039	1,911	2,324	2,077	2,241	2,264	1,994	1,668	1,276	**22,598**
	2023 vs 2019	-13%	-9%	+6%	+1%	-32%	-8%	-19%	-11%	+6%	-24%	-29%	-29%	-14%
	2023 vs 2022	+1%	-2%	-11%	-1%	-14%	-13%	-34%	-11%	+7%	-24%	+12%	-14%	-11%

Table 1.2: *Monthly Arrival and Departure Figures from 2019 to 2023*

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
Arrivals	**2019**	797	869	863	1,010	1,403	1,259	1,289	1,253	1,061	1,307	1,180	891	**13,182**
	2020	815	875	686	242	608	1,109	1,406	1,100	1,090	1,007	512	501	**9,951**
	2021	427	1,025	1,313	1,395	1,159	1,008	1,364	1,082	1,367	722	754	672	**12,288**
	2022	687	810	1,025	1,028	1,113	1,344	1,577	1,252	1,062	1,309	745	735	**12,687**
	2023	694	794	912	1,019	956	1,165	1,037	1,122	1,129	996	836	640	**11,300**
	2023 vs 2019	-13%	-9%	+6%	+1%	-32%	-7%	-20%	-10%	+6%	-24%	-29%	-28%	-14%
	2023 vs 2022	+1%	-2%	-11%	-1%	-14%	-13%	-34%	-10%	+6%	-24%	+12%	-13%	-11%
Departures	**2019**	797	870	861	1,009	1,412	1,260	1,285	1,251	1,068	1,316	1,182	894	**13,205**
	2020	813	877	692	244	611	1,110	1,396	1,097	1,095	1,009	512	500	**9,956**
	2021	428	1,027	1,315	1,398	1,153	1,009	1,369	1,089	1,355	738	749	673	**12,303**
	2022	690	809	1,023	1,032	1,119	1,341	1,578	1,255	1,050	1,308	745	741	**12,691**
	2023	699	789	916	1,020	955	1,159	1,040	1,119	1,135	998	832	636	**11,298**
	2023 vs 2019	-12%	-9%	+6%	+1%	-32%	-8%	-19%	-11%	+6%	-24%	-30%	-29%	-14%
	2023 vs 2022	+1%	-2%	-10%	-1%	-15%	-14%	-34%	-11%	+8%	-24%	+12%	-14%	-11%

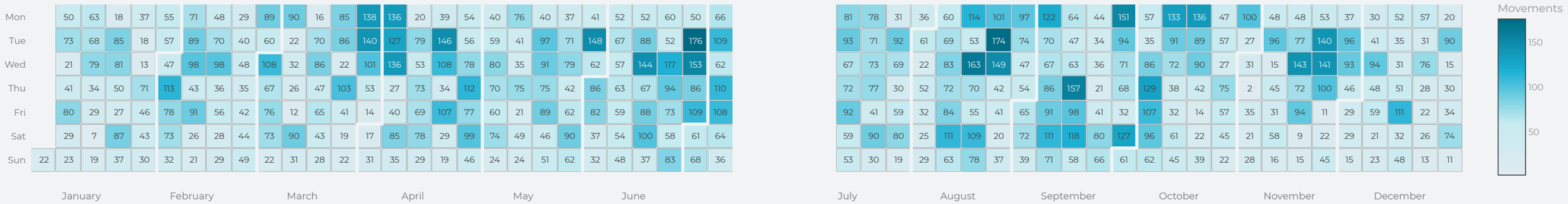


Figure 1.3: *Calendar view of movements per day in 2023*

A calendar view with daily movements can be seen in ***Figure 1.3***. It shows that the busiest days of the year were the 27th of June, the 16th of August and the 22nd of August. Other general trends can be derived from this graph: Sundays are usually less busy compared to other weekdays, traffic follows a seasonal fluctuation with the winter season being the period with the lowest traffic and summer the season with higher traffic. More information on this fluctuation is given in the next section.

Traffic Patterns

This section of the report describes the traffic pattern over the day in Ostend-Bruges International airport. The distribution of traffic over the hours of the day is shown in ***Figure 1.4***. The graph shows the average number of movements in an hour in steps of half hours. The night is defined from 23:00 to 06:00 local time and is indicated with a grey background.

Ostend Bruges International airport is open 24h/24h. The average daily pattern shows activity throughout the day and the night. A small peak of traffic can be seen in the morning (at 06:30) followed by a period of higher activity from 09:00 until 22:00.

Figure 1.5 shows the average flights per hour for the IFR traffic and ***Figure 1.6*** shows the distribution of VFR traffic. From these graphs it can be seen that the morning peak at 6:30 is a peak of IFR movements and also night traffic consists solely of IFR traffic.

VFR traffic, which is influenced by weather conditions, is mainly present from 09:00 until 22:00. In 2023, less VFR traffic was recorded. From ***Figure 1.6*** it can be derived that the decrease is mainly a decrease in the morning and in the evening hours (from 16:00).

Figure 1.7 offers a view on the airport's busiest times throughout the day, with a focus on the seasons. The graph shows that the early peak (06:30) is less pronounced in the winter and also, this season has less activity throughout the day. Comparing with other seasons, summer is the busiest season. A peak is present at around 6:30 in the morning and the active hours continue from 9:00 to 23:00, due to the nice weather and longer daytime. The peak hours in Summer are between 12:00 to 17:00.

In spring and fall, the early peak is present although lower than in summer. The active hours continue from 9:00 to 22:00, where two notable peaks can be seen at around 11:30 with a bit more than 6 movements/hour and at around 14:30 with around 6.5 movements/hour in the Spring and 7.75 movements/hour in the Fall. There is a little break between 12:00 to 14:00.

Figure 1.4: *Distribution of traffic over the day*

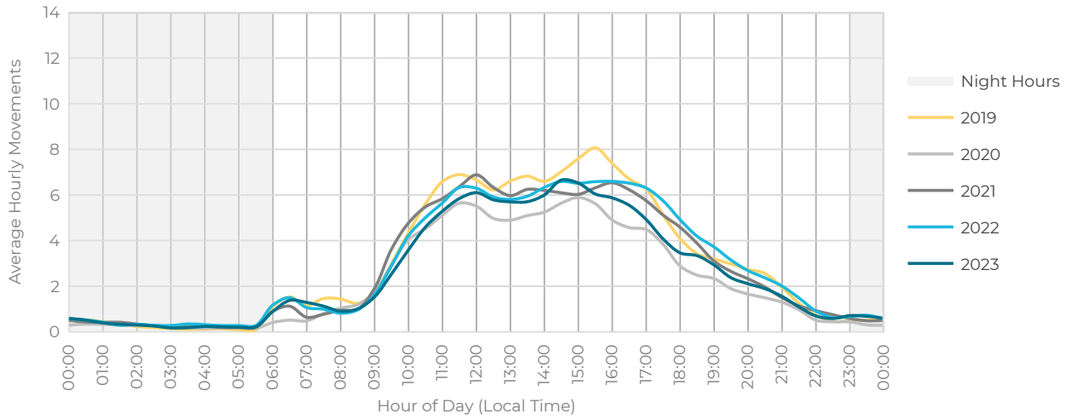


Figure 1.5: *Distribution of IFR Flights over the Day*

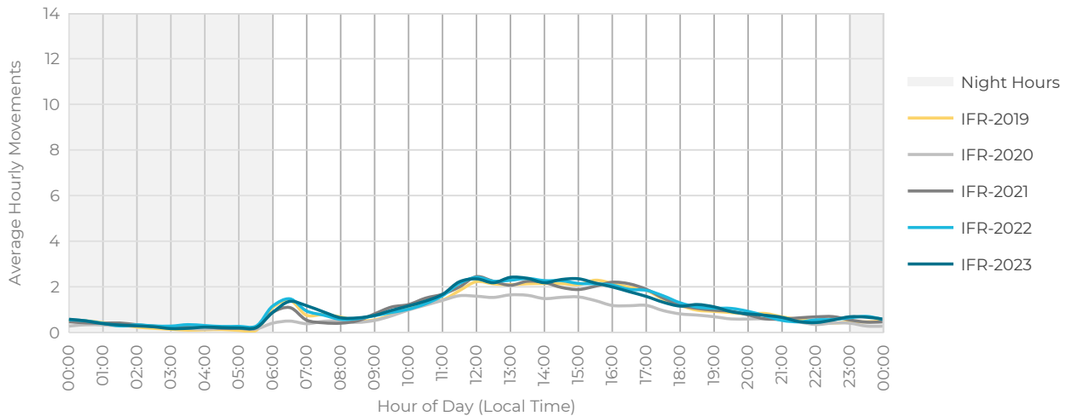


Figure 1.6: *Distribution of VFR Flights over the Day*

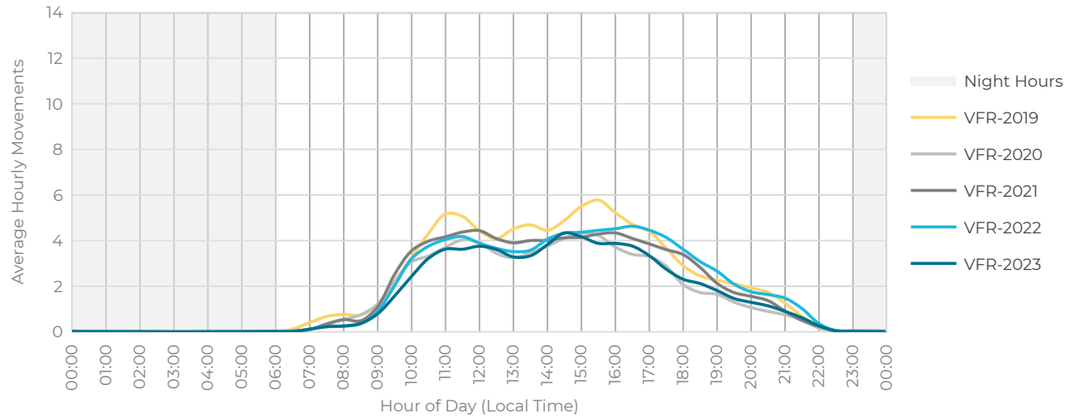
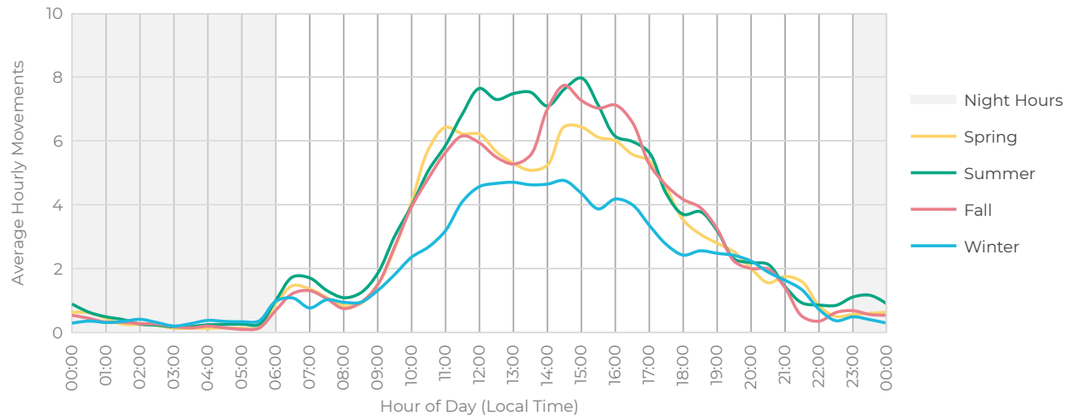


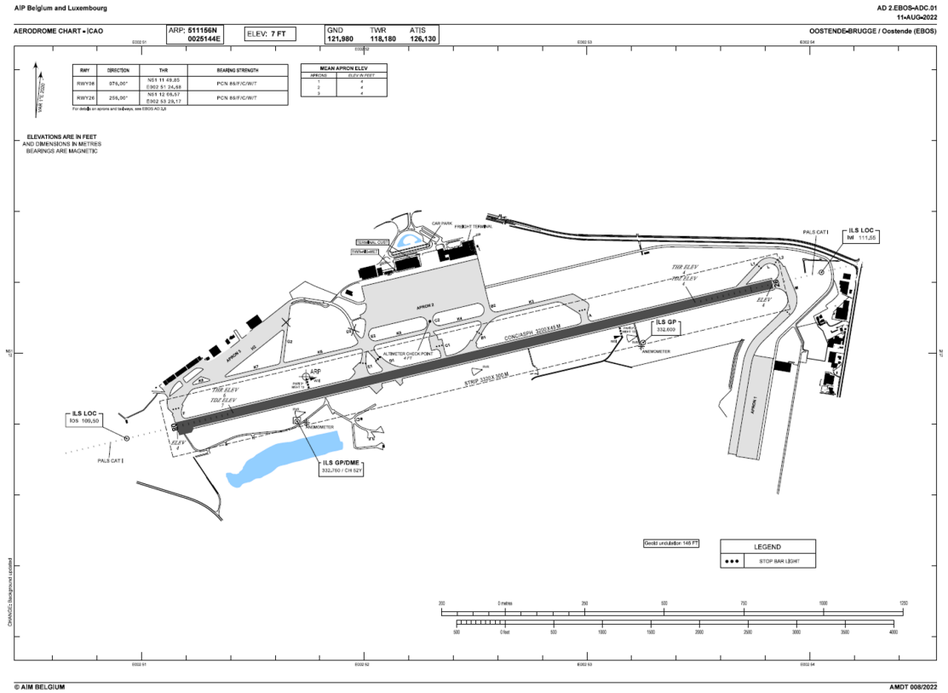
Figure 1.7: *Seasonal distribution of IFR and VFR Flights over the Day*



Runway Use

The layout of Ostend-Bruges International Airport with its two reciprocal runways (RWY) is depicted in the International Civil Aviation Organization (ICAO) chart in ***Figure 1.8***.

Figure 1.8: *ICAO Aerodrome Chart of Ostend-Bruges International Airport*



The use of one runway configuration over another depends on several factors that must be taken into account, such as wind direction and proximity to densely populated areas. ***Figure 1.9*** shows the runway use in Ostend–Bruges International Airport since 2019 with the wind rose below each year. Overall, in 2023, 14,305 movements were performed on runway 26. Ostend-Bruges International Airport has a preferential runway system (PRS) during evening and night hours. More information on this can be found in ***Chapter 4***.

Figure 1.9: *Runway Use at Ostend-Bruges Airport from 2019 to 2023*

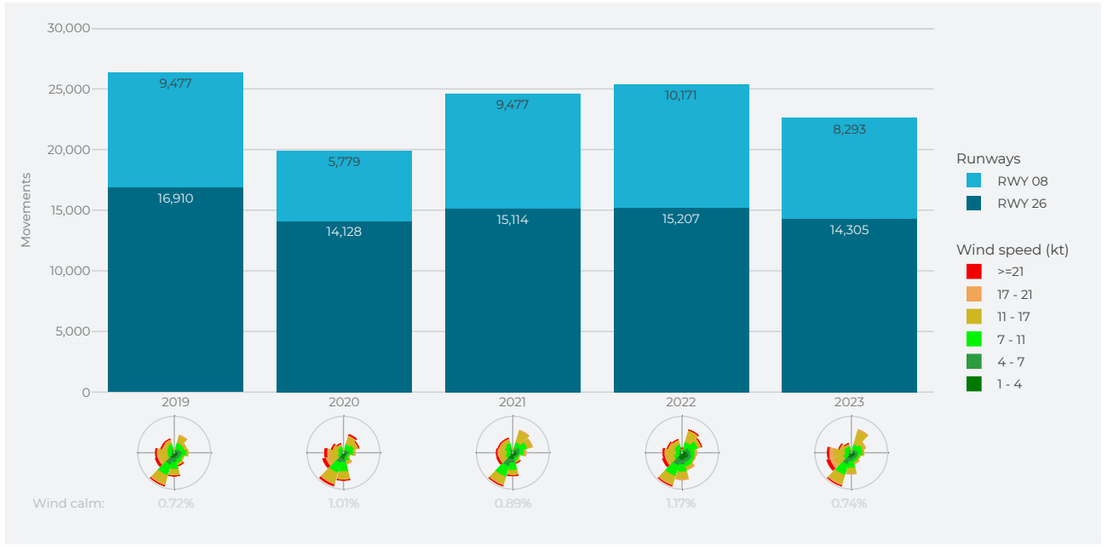
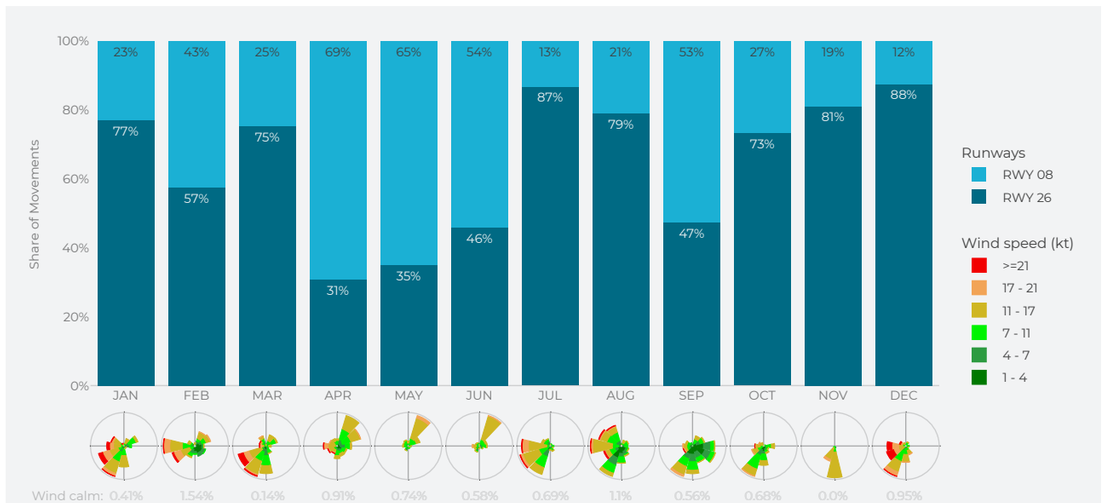


Figure 1.10 below shows the runway use per month of 2023 and the wind rose for each month. Wind direction is the main factor for the choice of runway configuration. Larger images of the wind roses can be found in ***Chapter 4***. July, November and December had prevalent south and south-westerly winds with almost no northeasterly winds resulting in a high usage of runway 26. In April, May and June the wind was mainly blowing from the North-East and in September there was a higher frequency of easterly winds, which explains the high usage of runway 08 during these months. The first trimester and October had a bigger north-easterly component, which is reflected in the runway usage.

Figure 1.10: *Runway Use and Wind Distribution at Ostend-Bruges Airport per Month in 2023*



Drone Activities

The emerging activities of unmanned aircraft systems (UAS) and the variety of their operations is one of the challenges driving the future of Air Navigation Service Providers (ANSP). To enable a reliable and efficient UAS integration, a framework is designed at EU level: U-space. U-space is a set of specific services and procedures designed to ensure safe and efficient access to airspace for a large number of drones. Implementing U-space airspace requires states to define and designate U-space airspaces with mandatory service provision. For the provision of these mandatory services, the deployment of U-space will entail the integration of two new service providers into the system: the common information service provider (CISP) and the U-space service provider (USSP). The CISP will be in charge of making available the common information required to enable the operation and provision of U-space services in U-space airspaces wherever it has been designated[1].

skeyes is playing a central role in the development of the U-space as manager of UAS geographical zones in Belgium and by actively participating in the BURDI Project. The BURDI project which stands for Belgium-Netherlands U-space Reference Design Implementation, is dedicated to implementing a U-space airspace concept to ensure a reliable and efficient UAS integration[2]. Additionally, since 2023, skeyes has been working on obtaining the certification to become the CISP in Belgium.

The controlled airspace above and around an airport is a UAS geographical zones, also called "GeoZone". UAS geographical zone are zones that are only accessible to drones complying with technical and operational criteria called access conditions, and that can have restrictions with regard to the use of drones. skeyes is the GeoZone manager for controlled airspace above and around the airports of Antwerp, Brussels, Charleroi, Liege, Ostend and the Radio Mandatory Zone of Kortrijk.[3,4]

skeydrone, created in 2020 as subsidiary of skeyes, envisages to play a central role in the implementation of U-space as USSP by offering a wide variety of services that enable safe and efficient drone operations in all types of airspace. This is how in 2022, skeydrone, in collaboration with the local development company, facilitated the implementation of the first marine GeoZone at an offshore test platform in the North Sea. Following that success, a project, implicating skeydrone, the port of Ostend and other European partners, was launched. Its aim is to develop offshore logistics solutions to support the transition from fossil fuels to renewable energy sources in the North Sea. In this context, skeydrone's contributions include implementing U-space drone corridors between land and offshore renewable energy platforms and managing offshore drone traffic as a USSP.[5]

One of the other services proposed by skeydrone is a web application: the Drone Service Application (DSA) to facilitate planning, coordination and information flow between drone operators and Air Traffic Control, especially in controlled airspace. The figures in this report related to UAS are provided by the DSA tool.

Table 1.3 displays the number of drone activities and the level of risk involved in the operations. These categories are defined by the risk the drone activity forms for manned aviation in very low level (VLL 0, 1 and 2) zones. For all airports where a Control Zone exists, these are defined as:

high risk — runway and surroundings

moderate risk — departure/approach track, visual circuits and rest of the control zone above 400 ft above aerodrome elevation (AAE), excluding the high-risk zone.

low risk — on the edge of the control zone below 400 ft AAE, outside the moderate and high-risk zone

Table 1.3: *Drone activities in EBOS per VLL zone risk*

	Low	Moderate	High	Total
2021	834	186	3	**1,023**
2022	836	3	6	**845**
2023	1,080	3	5	**1,088**
2023 *vs* 2021	+29%	-98%	+67%	+6%
2023 *vs* 2022	+29%	0%	-17%	+29%

1. https://www.ecac-ceac.org/activities/unmanned-aircraft-systems/uas-bulletin/22-uas-bulletin/504-uas-bulletin-2-what-is-u-space (URL retrieved 16/02/2024)
2. https://www.sesarju.eu/projects/BURDI (URL retrieved on 16/02/2023)
3. UAS geographical zone statuses can be seen at https://map.droneguide.be (URL retrieved 21/04/2024)
4. skeyes, "skeyes drone service application, https://www.skeyes.be/en/services/drone-home-page/you-and-your-drone/drone-service-application/ (URL retrieved 21/04/2024)
5. https://www.unmannedairspace.info/uncategorized/west-flanders-drone-ecosystem-expands-with-skydrone-support/ (URL retrieved on 21/02/2024).

In Ostend-Bruges International Airport's area, there were 1,088 drone activities recorded in 2023, an increase of 29% compared to last year. The majority of the drone operations near Ostend-Bruges International Airport are requested for the high risk VLL zone.

The drone operations can also be classified by level of risk involved in the operations. There are three such categories, which are described as follows (as per EASA definition):

OPEN — Presents low risk to third parties. An authorisation from the Civil Aviation Authority (CAA) is not required.

SPECIFIC — More complex operations or aspects of the operation fall outside the boundaries of the Open Category. Authorisation is required from the CAA.

FORMER CLASS 1 — Very complex operations, presenting an equivalent risk to that of manned aviation.

The number of authorized drone operations per EASA classification is given in ***Table 1.4***. 80% of the drone activities operated under the Open category (871 authorized drone operations) and 20% were registered as Specific (217 authorized drone operations).

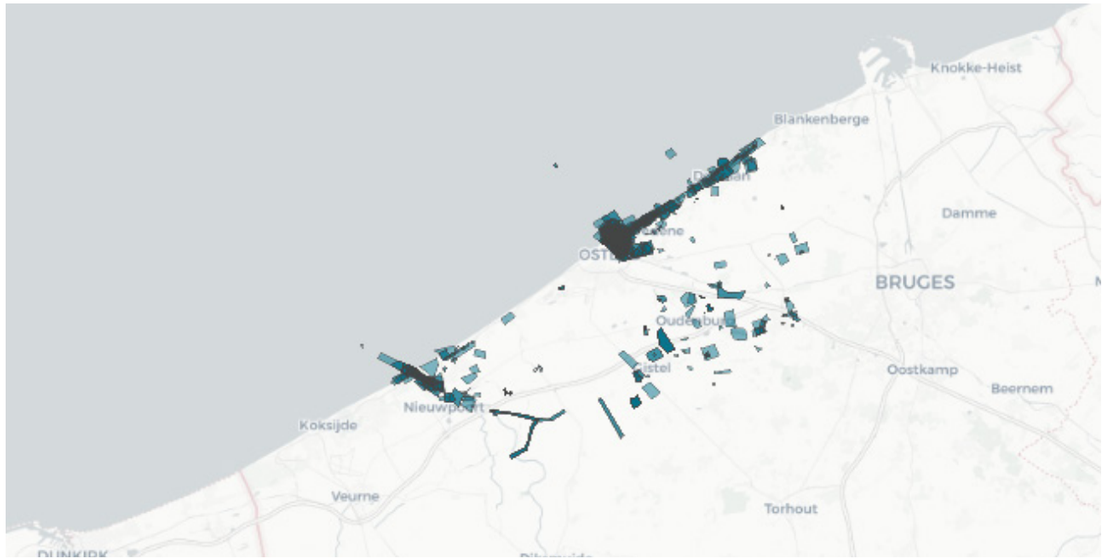
Table 1.4: *Drone Activities in EBOS per EASA Risk Category in 2023*

	Open	Specific	Former Class 1	Total
2021	812	182	29	**1,023**
2022	652	182	11	**845**
2023	871	217	0	**1,088**
2023 *vs* 2021	+7%	+19%	-100%	+6%
2023 *vs* 2022	+34%	+19%	-100%	+29%

6. EASA, "Drones - regulatory framework background". https://www.easa.europa.eu/domains/civil-drones/drones-regulatory-framework-background (URL retrieved on 10/02/2024)

To perform drone operations, the drone operator is required to reserve an airspace for the activity. ***Figure 1.11*** presents a map with the coordinates of the centroids of the reserved airspaces for the authorized done activities. There are a lot of initiatives for drones along the coast and a school for drone pilot operating at Ostend.

Figure 1.11: *Coordinates of centroids of reserved airspaces for the authorized drone activities in 2023*



Cargo

Based on air traffic market segment rules (STATFOR/EUROCONTROL) and flight plan information captured by skeyes' airport movement system, the number of cargo operations can be estimated. The EUROCONTROL's Market Segment Rules provides a definition for air traffic market segments based on lists of aircraft types, aircraft operators, and the ICAO flight types filed on flight plans. For this study, cargo refers to the "all-cargo" segment, not taking into account cargo moved in the hull of passenger aircraft.

Table 1.5 provide an overview of the yearly evolution of cargo traffic, other market segments (i.e., mainline, business aviation, low-cost scheduled, non-scheduled, regional, military, and other) and the share of cargo over all IFR traffic. The year of 2020 witnessed a significant increase in cargo figures, but since then, the cargo share has steadily declined in both volume and proportion to the overall IFR traffic.

Table 1.5: *Cargo movements per year at Ostend-Bruges International Airport*

	Cargo	Other IFR	% of Cargo
2019	800	8,035	**9%**
2020	1,701	4,775	**26%**
2021	1,782	7,296	**20%**
2022	1,631	7,933	**17%**
2023	1,516	7,917	**16%**

Figure 1.12 and ***Table 1.6*** shows the cargo traffic throughout the months. In 2020, we see a drastic increase in the amount of cargo traffic, which has held steady after the COVID-19 crisis. The number of cargo movements have decreased from 2022 by 7%, however, it is still almost double compared to 2019 (+90%). The market share of cargo movements of all IFR flights in Ostend has decreased from 17% in 2022 to 16% in 2023. The decrease in cargo traffic is mostly influenced by the sudden departure of Qatar Airways Cargo in April 2023. The number of Qatar Airways Cargo movements dropped from 320 movements in 2022 to 34 movements in 2023. The busiest months in 2023 are January and July. Noteworthy is the increased activity of cargo movements in June and July due to a temporary increase in activity of Fleet Air International (Budapestian cargo airline), Vulkan Air (Ukrainian cargo airline), Cavok Air (Ukrainian cargo airline), RAFAVIA (Latvian airline) and Bluebird Nordic (Icelander cargo airline).

Despite this expected decline, the airport continues to invest in its cargo activities. In 2023, the brand-new Versluys cargo shed of 12,000 m2 was completed, which offers new opportunities for the further development of freight activities. The airport is currently in discussions with various parties to further exploit this space in 2024 and thus strengthen the airport's position as a cargo airport[7].

7. https://pers.prezly.com/luchthaven-oostende-brugge-ziet-passagiersaantallen-opnieuw-stijgen-in-2023 (URL retrieved on 02/02/2024)

Figure 1.12: *Monthly Cargo Traffic at Ostend-Bruges International Airport from 2019 to 2023*

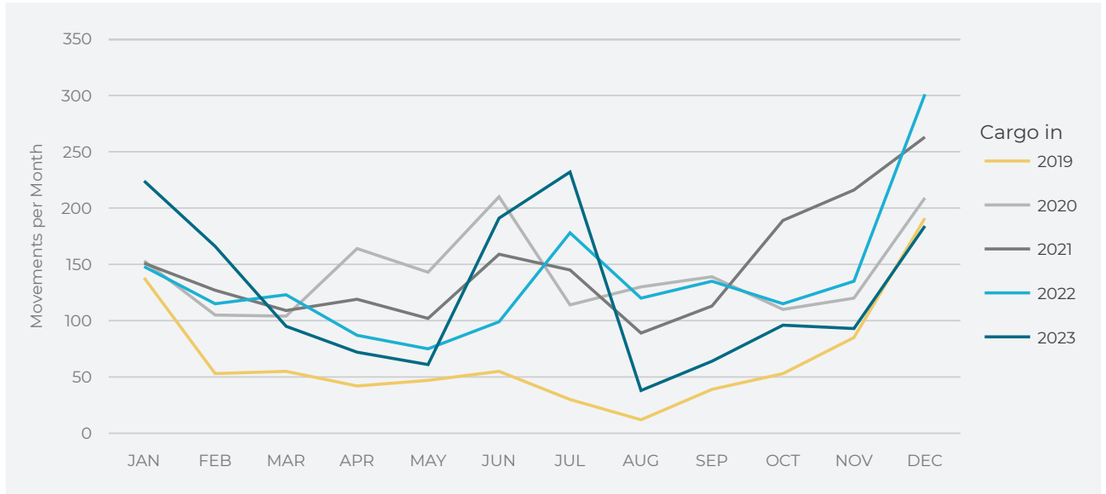


Table 1.6*: Monthly Cargo Traffic at Ostend-Bruges International Airport from 2019 to 2023*

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
2019	138	53	55	42	47	55	30	12	39	53	85	191	**800**
2020	153	105	104	164	143	210	114	130	139	110	120	209	**1,701**
2021	151	127	109	119	102	159	145	89	113	189	216	263	**1,782**
2022	148	115	123	87	75	99	178	120	135	115	135	301	**1,631**
2023	224	166	95	72	61	191	232	38	64	96	93	184	**1,516**
2023 *vs* 2019	+62%	+213%	+73%	+71%	+30%	+247%	+673%	+217%	+64%	+81%	+9%	-4%	+90%
2023 *vs* 2022	+51%	+44%	-23%	-17%	-19%	+93%	+30%	-68%	-53%	-17%	-31%	-39%	-7%

Missed Approaches

Runway Incursions

Other Noteworthy Incidents

Improvements And Recommendations

SAFETY

This section is divided in three topics: missed approaches, runway incidents, such as runway incursions, and improvements and recommendations.

The missed approaches covered in the following chapter are based on internal logging. As such, the quality and accuracy of the available information is commensurate with the level of reporting. These logs of missed approaches are not considered as safety occurrences. They are an operational solution allowing to maintain safety margins when the approach cannot be continued for a safe landing. At the same time, particularly during peak hours at busy airports, they also increase the traffic complexity and the residual safety risk. It could be argued that missed approaches are a hybrid leading indicator, and that by analysing the reasons leading to this type of procedure, it is possible to examine if there are any systemic deficiencies in a technical equipment, in a procedure or in manner in which Air Traffic Control Officers (ATCOs) and/or pilots apply these procedures.

The runway incursions are a lagging runway safety indicator. The runway incursions and occurrences discussed in other noteworthy incidents are safety occurrences. These are subject to a risk classification using the Risk Analysis Tool (RAT) methodology to assess the contribution that skeyes had in the chain of events (in accordance with EU Reg 376/2014 and EU Reg 2019/317). The following chapters indicate the severity classification that was derived from the calculated RAT risk for the safety occurrences. The following definitions apply for the severity classification (in accordance with EASA AMC).

The following definitions apply for the severity classification (as per EASA Acceptable Means of Compliance (AMC)). This classification scheme is applicable for the operational occurrences.

Table 2.1: *Severity classification*

Severity Classification	Description
A – Serious incident	An incident involving circumstances indicating that an accident nearly occurred.
B – Major incident	An incident associated with the operation of an aircraft, in which the safety of the aircraft may have been compromised, having led to a near collision between aircraft, with ground or obstacles (i.e. safety margins were not respected; in this case, not as a result of an ATC instruction).
C – Significant incident	An incident involving circumstances indicating that an accident, or a serious or major incident could have occurred if the risk had not been managed within the safety margins, or if another aircraft had been in the vicinity.
D – Not determined	Insufficient information was available to determine the severity, or inconclusive or conflicting evidence precluded such determination (RAT RF < 70 %).
E – No safety effect	An incident which has no safety effect.
N – No ATM ground contribution	No system, procedure or person involved in the provision of ATC services initiated or contributed to the incident.

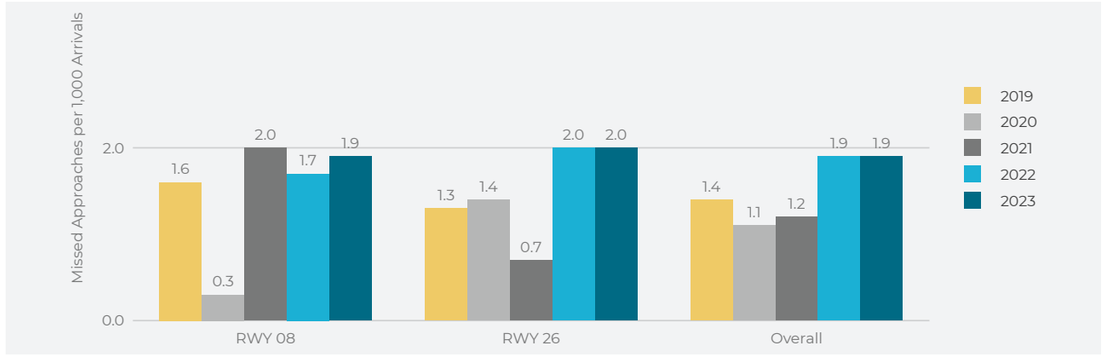
Missed Approaches

Missed approaches are performed according to published procedures, under the instructions of the air traffic controller or initiated by the pilot when the approach cannot be continued for a safe landing. Besides the discomfort for passengers and crew, the missed approaches increase the air traffic management complexity. The number of missed approaches and particularly their cause can therefore indicate which measures are to be taken to improve the safety of air navigation service provision. All missed approaches are recorded by cause of event, and the reporting is done by the ATCOs. The number of missed approaches in Ostend–Bruges International Airport since 2019 are as follows:

2019: 19 missed approaches (11 on runway 26, 8 on runway 08)
2020: 11 missed approaches (10 on runway 26, 1 on runway 08)
2021: 15 missed approaches (5 on runway 26, 10 on runway 08)
2022: 24 missed approaches (15 on runway 26, 9 on runway 08)
2023: 22 missed approaches (14 on runway 26, 8 on runway 08)

For a better year-to-year comparison, refer to ***Figure 2.1.*** The graph reveals that the missed approach rate on runway 26 remains consistent with that of 2022. However, on runway 08, the rate is elevated, totaling 1.9 missed approaches per 1,000 arrivals.

Figure 2.1: *Rate of missed approaches per 1,000 arrivals per runway per year*



Missed approaches are documented, categorized by their respective causes, with Air Traffic Control Officers (ATCOs) responsible for reporting. In 2023, the predominant reasons for missed approaches were an unstable approach and maintaining insufficient separation distance behind the preceding aircraft, as illustrated in ***Figure 2.3***.

Figure 2.2*: Missed approaches per cause in 2023*

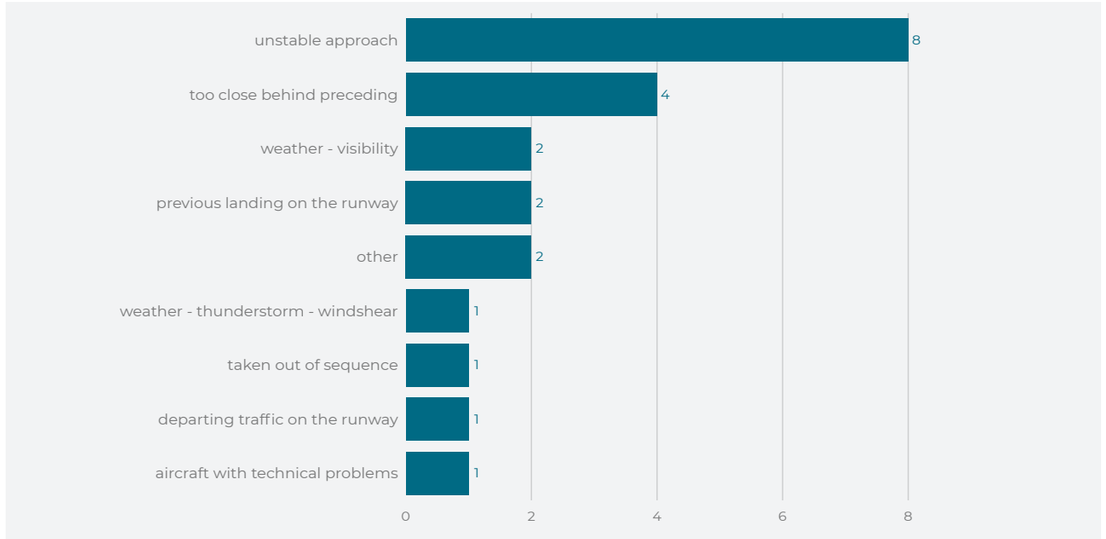


Table 0.1 in the **ANNEX**: Missed approaches gives the number of missed approaches per runway and per cause for the last five years. On the main runway, runway 26, the three most common reasons for missed approaches were an unstable approach (four incidents), too close behind the preceding aircraft (three incidents), and a previous landing on the same runway (two incidents). In comparison to 2022, there has been a significant reduction in missed approaches caused by poor visibility. For the other runway, runway 08, seven missed approaches were reported, of which four were due to an unstable approach.

Runway Incursions

A Local Runway Safety Team at Ostend–Bruges International Airport - SAFCO, is attended by all runway users (operators, airport inspection, ATC, ...). During this meeting, a number of Safety Performance Indicators are discussed, along with relevant incidents/accidents. They are discussed during these meetings, so that the lessons learned can be disseminated among all stakeholders.

According to ICAO Doc 4444 – PANS–ATM, a runway incursion is defined as "Any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle or person on the protected area of a surface designated for the landing and take-off of aircraft". AMC 3 of EU Reg 2019/317 defines the "incorrect presence" as "the unsafe, unauthorised or undesirable presence, or movement of an aircraft, vehicle, or pedestrian, irrespective of the main contributor (e.g., ATC, pilot, driver, technical system)".

In 2023, nine runway incursions have been registered in Ostend–Bruges International Airport, of which two were with Air traffic management (ATM) contribution. One runway incursion is classified as a C-Significant incident where an incorrect clearance was given with regards to the wake turbulence separation minima. The other runway incursion with ATM contribution is classified as E – No Safety Effect, due to non-standard phraseology, an aircraft misunderstood a revised clearance as a take-off clearance. Of the runway incursions without ATM contribution, one was a take-off without clearance, three involved a vehicle or aircraft entering the runway without clearance and three were due to backtracking without clearance.

Figure 2.3: *Runway Incursions per Severity Category at Ostend-Bruges Airport by Year*

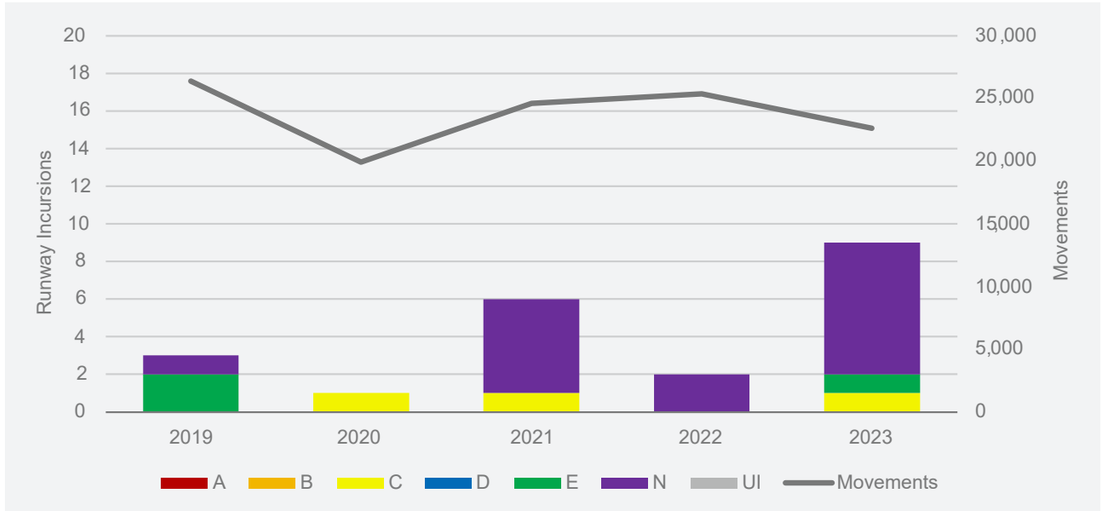


Figure 2.4: *Runway Incursions by ATM Contribution at Ostend-Bruges Airport from 2019 to 2023*

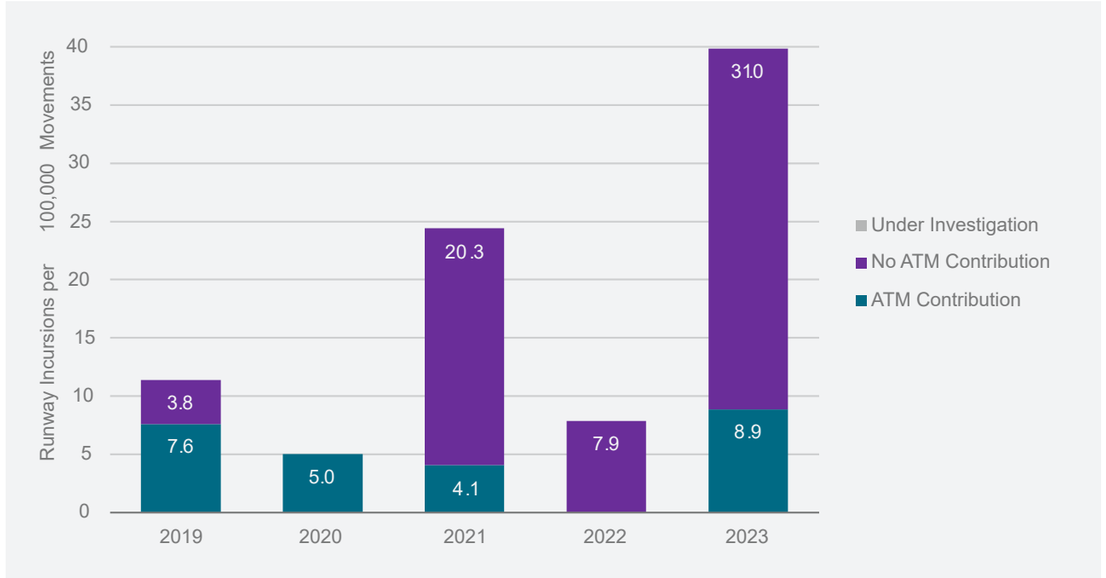
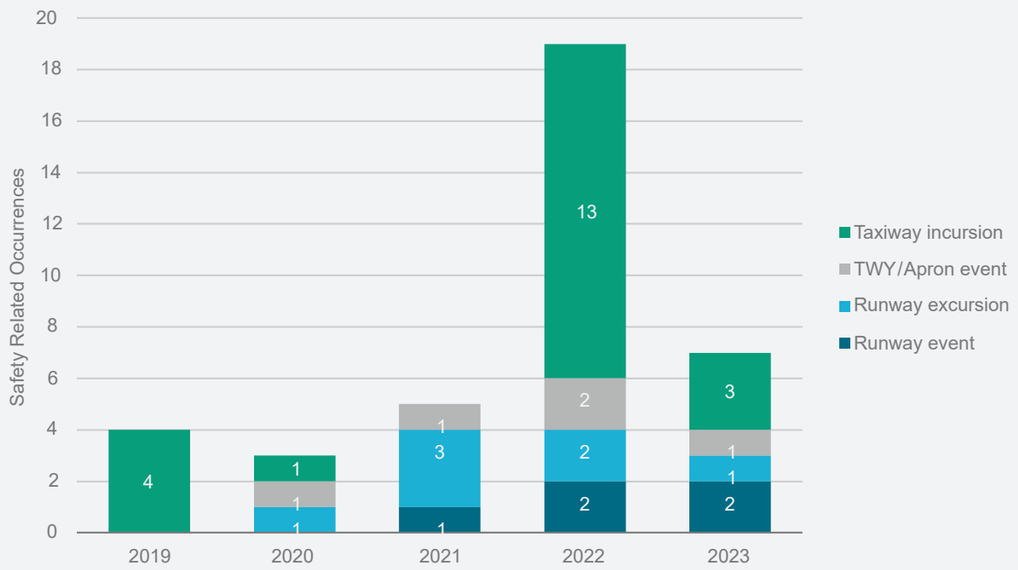


Figure 2.4 puts the number of RIs in perspective by normalizing this value with the number of movements during the year. The rates of RIs with ATM contribution and without have seen a significant increase since 2022 and are the highest since 2019: a rate of 8.9 runway incursions with ATM contribution per 100,000 movements and a rate of 31.0 runway incursions with no ATM contribution per 100,000 movements.

Other Noteworthy Incidents

In addition to runway incursions, other runway and taxiway incidents can happen and must be reported. These occurrences include runway events, runway excursions, taxiway/apron events, taxiway excursions and taxiway incursions. ***Figure 2.5*** gives a summary of those incidents in Ostend–Bruges International Airport per year.

Figure 2.5: *Runway/Taxiway Safety Related Occurrences at Ostend-Bruges Airport from 2019 to 2023*



In 2023, after an exceptionally high level of 13 taxiway incursions in 2022, the number of taxiway incursions decreased again to a total of three taxiway incursions which is more in line with previous years. None were due to ATM involvement. A taxiway incursion is often the result of pilots not following procedure or ATCO instructions, mostly resulting in a deviation from their designated taxi route. The taxiway incursions reported involved a pilot taking a different taxiway than the cleared taxiway. There was no impact on other traffic. One TWY/Apron event related to a pushback was reported in 2023.

One runway excursion and two runway events were reported. The runway excursion was an aircraft that ended in the grass just before vacating, no damage was reported and normal operations could continue. The two runway events involved helicopter flights; one runway event had ATM contribution. An ATCO, who did an on-the-job training, instructed a helicopter that it was cleared to land while the Bird control vehicle was still on the runway. The instructor intervened and ensured a safe resolution. This event was classified with severity E – no safety impact. The other was reported due to phraseology and radio technique issues.

Improvements And Recommendations

SAFCO meets every two months , is committed to increasing runway safety and is composed of pilots, air traffic controllers, and safety departments of skeyes and the airport. The main objective is to reduce the number of runway incursions based on EUROCONTROL's European Action Plan for The Prevention of Runway Incursions.

These SAFCO meetings are a moment to discuss safety issues between partners and to share outcomes of the safety investigations among all parties, so that everyone may benefit from the lessons learned. When recommendations are made in an investigation report, these are also discussed with other stakeholders. If a recommendation from skeyes concerns the airport for instance, it will be discussed and agreed upon during a SAFCO meeting.

The runway events mentioned above are examples of incidents, which were discussed during SAFCO meetings, so that improvements could be made and awareness raised. A coordination between the Belgian Civil Aviation Authority (BCAA), ATC, and the airport resulted in relocation of the panel indicating of taxiway B1 to avoid other confusions. As a result, there was no taxiway incursion due to pilots mistaking taxiway C1 for B1 and exiting the runway at the wrong location.

In addition, in 2023, skeyes implemented a common transition layer in all Belgian airspace to ensure 1,000 ft separation between traffic below and above this layer (the transition layer separates traffic which vertical position is defined based on local altitude and traffic which vertical altitude is defined based on Average Sea Level). This is in line with ICAO DOC 7030 EUR and Commission Implementing Regulation (EU) 2020/469 of 14 February 2020.

Airport Capacity

Punctuality

CAPACITY & PUNCTUALITY

This chapter addresses the airport capacity and punctuality. In a first section, the declared capacities for different runway configurations are given along with a view on the effective utilisation of this capacity.

In the second section, the punctuality at Ostend-Bruges International Airport is studied. The arrival delay, delay due to regulations placed by Ostend-Bruges International Airport on the arrivals, is analysed and the ATFM delay from the airport's point of view is given, i.e. the impact on traffic to or from Ostend-Bruges International Airport caused by regulations not only at Ostend-Bruges International Airport, but also in the Belgian en-route airspace and by other Air Navigation Service Providers (ANSPs).

Airport Capacity

The capacity of an aerodrome, i.e. how many operations can be handled in a certain amount of time, is influenced by several factors including the airport layout, the fleet mix of the arriving and departing traffic, ATC procedures, weather conditions, and technological aids.

For optimal conditions, a theoretical measure of the capacity is calculated per runway configuration of the airport: This **Theoretical Capacity Throughput**, which determines the average number of movements (arrivals and/or departures) that can be performed on the runway system within one hour, is calculated considering certain assumptions of optimal conditions:

- *There is a continuous supply of arrivals and/or departures.*
- *Simultaneous Runway Occupancy (SRO) is prohibited (air traffic control rule).*
- *The Safe Wake Vortex Separation distance between two flights has to respected at all times (air traffic control rule).*
- *The fleet mix is static (i.e., types of aircraft do not change).*
- *Approach and departure procedures do not change.*
- *Conditions of flying and service provision are optimal (weather, staffing, etc.).*

For the calculation of the Theoretical Capacity Throughput, on top of the above-mentioned assumptions, the following parameters have been considered:

- *The fleet mix of the busiest month in 2018 is taken as reference.*
- *A nominal radar separation of 3NM.*
- *A loss factor of 15% is considered for inter arrival times, which accounts for the fact that controllers rather want to err on the right side when separating aircraft.*
- *The average Runway Occupancy Time for Arrivals (ROTA) is based on assumptions.*
- *The average approach speed is 136 knots (based on measurements).*
- *The average headwind differs per runway and is subtracted from the average approach speed.*
- *The inter-departure-time is a function of the between take-off-clearance delivery and the aircraft reaching a given altitude.*

Since the safe wake vortex separation distance between two flights, which is one of the inputs of the theoretical model, is only declared for IFR flights, the Theoretical Capacity Throughput also just indicates to the maximum number of IFR movements that an aerodrome can handle per hour with a specific runway configuration under optimal conditions.

In practice, such optimal conditions are rarely reached. Therefore, the declared capacity is set at 90% of the optimum. As it only represents the capacity of IFR flights it is also referred to as "Declared IFR Capacity". ***Table 3.1*** shows the declared capacity per runway configuration at Ostend-Bruges International Airport. Note that this is only a theoretical calculation and currently not used for schedule coordination purposes.

Table 3.1: *Declared IFR capacity*

Runway Configuration		Declared IFR Capacity (movements/hour)		
Departures	Arrivals	Only Departures	Only Arrivals	Mixed Fleet
08	08	27	24	33
26	26	24	23	34

To get a view on the actual usage of the aerodrome's capacity, the Effectively Used Capacity is an important performance indicator for the airport and the air navigation service provider handling the arrivals and departures. For each runway configuration, it compares the theoretical value of the declared capacity to the distribution of the actual number of movements performed within each hour of the year.

Figure 3.1 and ***Figure 3.2*** provide a way to visually inspect if the declared capacity has ever been exceeded on runway 26 and runway 08 respectively. In these plots, each dot represents a rolling hour throughout the year of 2023 (with a roll step of one minute), during which the runway configuration was active for at least an hour within the default opening times of the aerodrome and during which there was at least one movement. The measuring points with no arrivals and no departures are disregarded in the graph. The position of the dot indicates the number of arrivals (y-axis) and the number of departures (x-axis). The opacity of the dot indicates if there were many or few hours with this number of arrivals and departures, with more translucency indicating less hours. The histograms on the sides show the distributions of arrivals and departures. The declared capacity is shown by a diagonal red line: At any point on this line, the x-axis value (departures) and y-axis value (arrivals) will add up to the threshold number (total movements). Any dot above this line indicates an hour exceeding the declared capacity. Note that this capacity is usually only declared for IFR movements, yet this plot considers both IFR and VFR movements. This is because only considering IFR flights would give a distorted view on the number of hourly movements – especially for airports with high VFR shares. Helicopter movements are not included, as they don't land on the runways of the configurations, but missed approaches are. The notation for the runway configurations in this report always mentions the departure runways first and the arrival runways, separated by a hyphen, afterwards.

Figure 3.1: *Distribution of the Hourly Movements for runway 26 in 2023.*

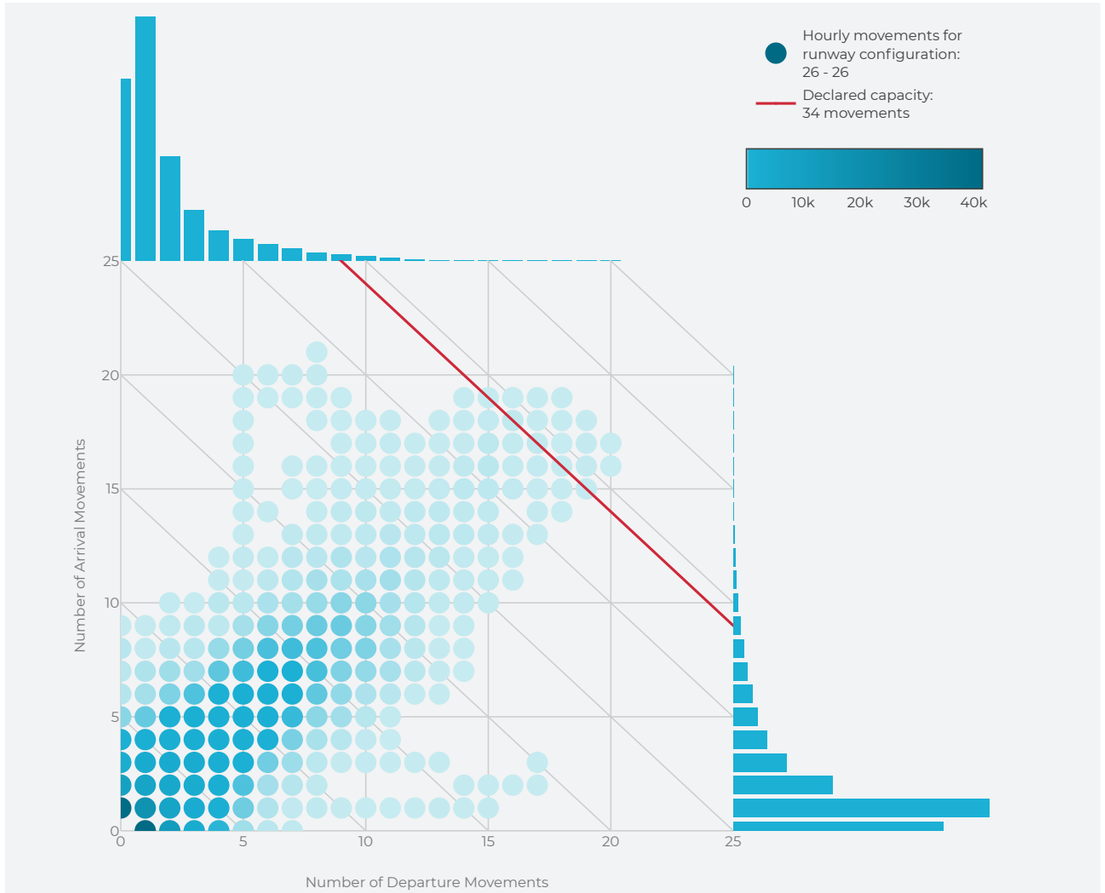
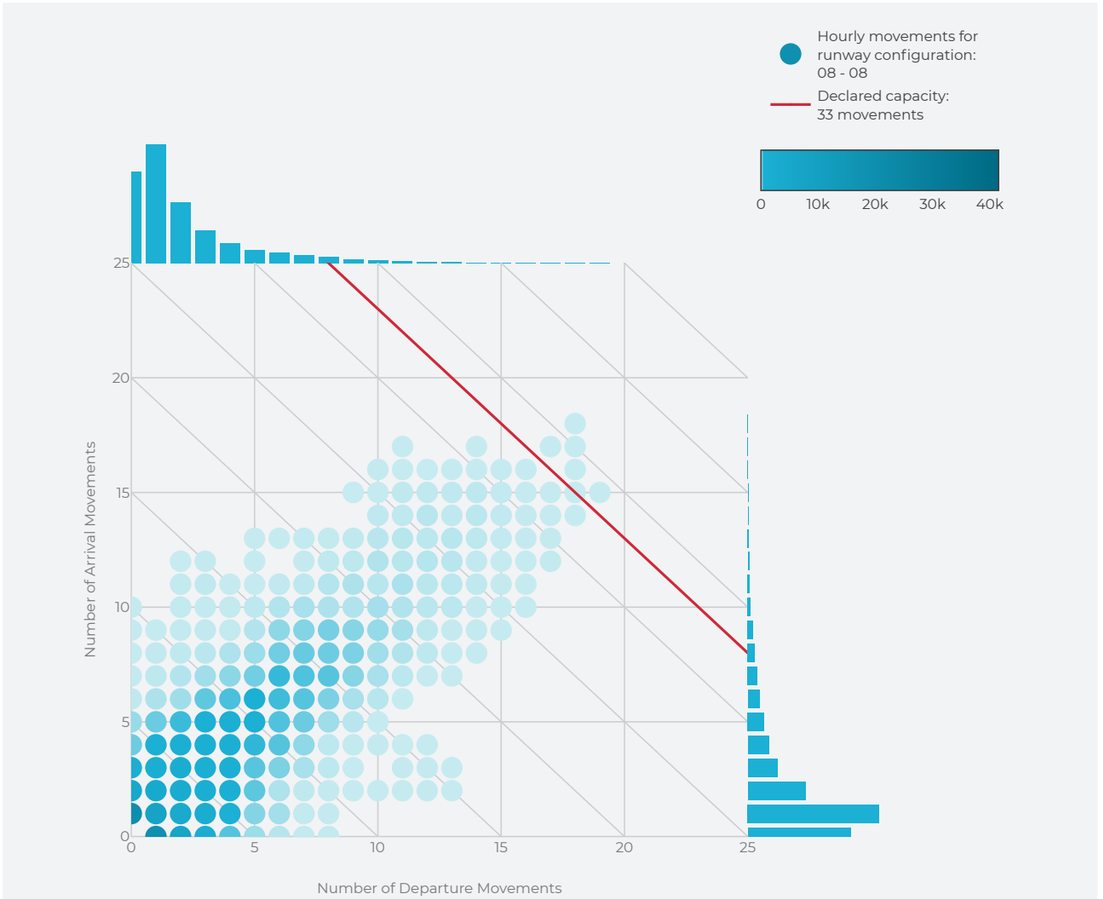


Figure 3.2: *Distribution of the Hourly Movements for runway 08 in 2023*



In 2023, traffic exceeded the declared IFR capacity on some occasions. In total, there were five days where the capacity was exceeded in 2023, four were for runway configuration 26 - 26 and one was for configuration 08 - 08. If the maximum number of movements within an hour exceeds the declared capacity, this can be due to several reasons. For instance, a high share of VFR traffic could be the cause: Since the separation minima do not apply strictly to these flights, more movements can be performed within an hour. Other possible explanations include that the declared capacity was exceeded because of an exceptional deviation from safety margins, that there were many missed approaches or touch-and-go's (they count as two movements in little time), etc.

Table 3.2 give figures on the days where the traffic exceeded the capacity. As the calculation is based on a rolling calculation per minute, the capacity is exceeded for a period. The table gives a summary in terms of extra movements (during the time that the traffic exceeded capacity the minimum number and maximum number of extra movements is given), share of IFR traffic and share of departures.

On the 14th of June 2023, traffic exceeded capacity on runway 08. In the afternoon, due to an increased amount of VFR traffic and touch-and-go's the number of movements recorded where 34 to 36 movements while the declared capacity is 33 movements. As mentioned above, the separation minima only apply for IFR traffic.

Concerning the runway configuration 26 – 26, the declared capacity was exceeded on four occasions with traffic records up to 37 movements. On all occasions, an increased amount of touch-and-goes were performed with both instrumental and visual flight rules. Notably, on the 28th of June with more than 70% of IFR traffic, three aircraft performed touch-and-goes under instrumental flight rules. While performing touch-and-go's, which count as two movements, the recorded traffic can be slightly higher than the declared capacity while respecting the separation minima and ensuring safe operations in the airport and its surroundings.

Table 3.2: *Days with Hours Exceeding the Capacity at EBOS in 2023 per Runway Configuration*

Runway Configuration		Date	Extra Movements		% IFR		% Departures	
Departures	Arrivals	2023	min	max	min	max	min	max
08	08	Jun. 14	1	3	12%	18%	50%	56%
26	26	Mar. 6	1	3	34%	40%	49%	54%
		Jun. 28	1	2	71%	72%	46%	47%
		Sep. 25	1	3	11%	11%	50%	56%
		Nov. 17	2	2	17%	19%	47%	50%

Punctuality

Punctuality can be seen as a service quality indicator from a passenger perspective. This section observes one of the factors that influences the punctuality: Air Traffic Flow Management (ATFM) delay. ATFM delay is defined as the time difference between estimated take-off time (ETOT) and calculated take-off time (CTOT) of the NM (Network Manager, EUROCONTROL) and is due to ATFM measures that are classified according to the respective causes listed below:

A - Accident
C – ATC Capacity
D - De-icing
E - Equipment (non-ATC)
G – Aerodrome Capacity
I - Industrial Action (ATC)
M - Airspace Management
N - Industrial Action (non-ATC)
P - Special Event
R – ATC Routeing
S – ATC Staffing
T - Equipment (ATC)
V – Environmental Issues
W - Weather
NA - Not Specified
Other

The ATFM measures with Air Navigation Service Provider (ANSP) contribution are listed according to the Functional Airspace Block Europe Central (FABEC) performance plan:

C – ATC Capacity
R – ATC Routeing
S – ATC Staffing
T - Equipment (ATC)
M - Airspace Management
P - Special Event

In the remainder of the report, all causes with ANSP contribution are referred to as CRSTMP. Additionally, we split the measures due to “W – Weather” in a separate category, resulting in three aggregated categories: CRSTMP, Weather and Other categories.

The following subsection starts with the key performance indicator of arrival delay. Arrival delay is the delay of a flight due to a regulation placed by the airport of arrival. In addition, another subsection gives an overview of the influence of ATFM measures on traffic arriving to or departing from Ostend–Bruges International Airport.

Airport arrival ATFM delay

As of the 1st of January 2015, skeyes is subject to an annual target regarding ATFM Arrival Delay. ATFM Arrival Delay is the delay of a flight attributable to the terminal and airport air navigation services and caused by restrictions on landing capacity (regulations) at the destination airport. The average minutes of ATFM Arrival Delay per flight is a performance indicator conforming to the European Performance Regulation (EU) no 317/2019, Annex 1, section 1, 3.1(b). This indicator is the average time, expressed in minutes, of ATFM Arrival Delay per inbound IFR flight and is calculated for the whole calendar year. The indicator includes all IFR flights with an activated flight plan submitted to the Network Manager landing at the destination airport and covers all ATFM delay causes excluding exceptional events.

Targets are set on a national level and on an airport level. For reference period 3 (RP3), 2020-2024, only Brussels Airport was considered as contributing airport. Initially the national target was planned to be 1.82 minutes/flight for all causes and 0.17 minutes/flight for CRSTMP causes. However, due to the unexpected impact of COVID-19 on the air traffic, the European Commission requested a revision of Union-wide performance targets for RP3. The current outline only includes arrival delay targets for Belgium as of 2023 (1.08 minutes per flight all causes and 0.12 minutes per flight and the only contributing airport remains Brussels Airport).

Despite not having its own target, skeyes registers the arrival delays for Ostend–Bruges International Airport as part of a continuous monitoring of the ANSP’s performance and internal performance indicator. This indicator is the average time, expressed in minutes, of arrival ATFM delay per inbound IFR flight and is calculated for the whole calendar year. The indicator includes all IFR flights with an activated flight plan submitted to the Network Manager landing at the destination airport and covers all ATFM delay causes excluding exceptional events.

The number of arrivals and the arrival delay for the performance indicator for the years 2019 to 2023 are given in ***Table* 3.3**. The average arrival delay per flight is calculated by dividing the sum of arrival delay with ANSP contribution by the number of total flights calculated by the Network Manager (EUROCONTROL). Both the arrival delay and the included flights are provided by the Performance Review Unit (EUROCONTROL) .

In 2023, 38 minutes of ATFM delay is attributed to Ostend-Bruges International Airport. On the 18th of October 2023 an ATFM measure was put in place in response to a bomb threat resulting in the 38 minutes delay.

***Table* 3.3:** *Arrival Delay at Ostend-Bruges Airport per Year and Cause*

	Minutes of ATFM Arrival Delay				IFR Arrivals
Year	CRSTMP	Weather	Other categories	Total	(with flight plan)
2019	0	0	0	**0**	3,554
2020	0	0	0	**0**	2,634
2021	0	0	0	**0**	3,401
2022	0	0	0	**0**	3,942
2023	0	0	38	**38**	3,978

All ATFM impact on traffic at Liege Airport

The impact of ATFM measures go beyond the restrictions placed by the airport of destination. In this section of the report, a view is given on the ATFM delay for all departing and arriving traffic in Ostend–Bruges International Airport. Regulations can be put in place at all ATC sectors on the flight plan: en-route sectors, departure and/or destination airport. The impact of all these regulations give the total ATFM delay at the airport. With the traffic downturn during COVID-19 the need for regulations was very low up to 2021. With the post-COVID-19 recovery bringing a much busier airspace, the need for regulations has once again increased.

This can also be seen in the ATFM delay figures for arriving and departing traffic in Ostend-Bruges International Airport. ***Figure 3.3*** shows the total ATFM impact for all traffic arriving in Ostend–Bruges International Airport for the years 2019 to 2023. For arriving traffic, the delay increased from 1,008 minutes in 2021 to 7,864 minutes in 2022 and to 9,388 minutes in 2023, impacting 556 flights. 233 minutes (2.4%) were due to regulations from Skeyes and 9,155 minutes from other ANSPs.

Figure 3.4 shows the total ATFM impact for all traffic departing from Ostend–Bruges International Airport for the years 2019 to 2023. The ATFM delay increased from 1,756 minutes in 2021 to 8,231 minutes in 2022 and to 10,068 in 2023, impacting 597 flights. 131 minutes (1.3%) of delay were due to regulations from Skeyes and 9,937 minutes from other ANSPs.

8. Hence the difference with figures in Chapter 1, where movements are counted using the AMS and the BCAA criteria. EUROCONTROL only account for flights with a registered flight plan

Figure 3.3: *ATFM Delay on Arrivals Attributable to Skeyes and other ANSPs*

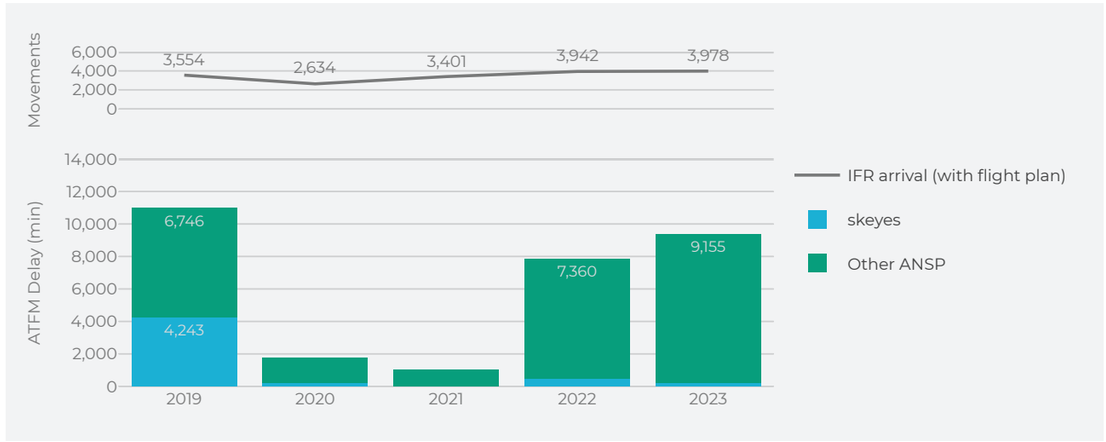
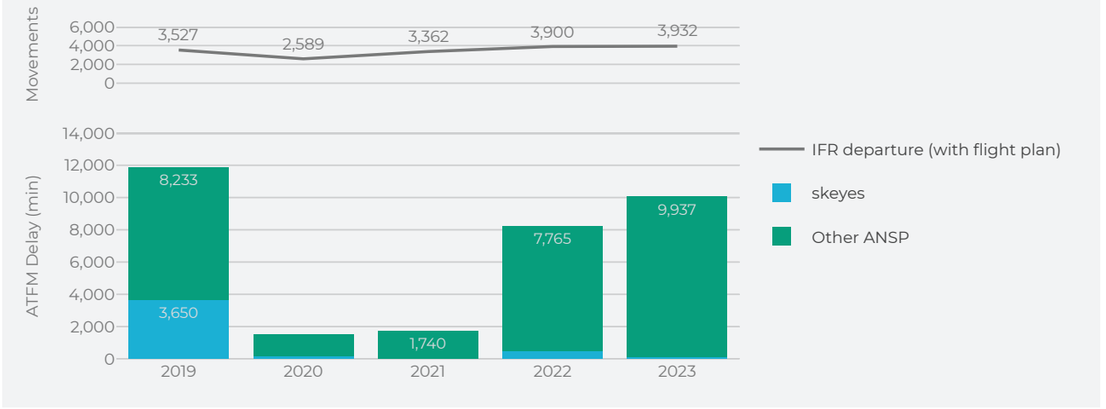


Figure 3.4*: ATFM Delay on Departures Attributable to skeyes and other ANSPs*



In total, in 2023, 556 arrivals and 597 departures in Ostend–Bruges International Airport were impacted by ATFM regulations. Those can be categorised by severity, based on the duration of the delay. There are four categories:

- *Between 1 and 15 minutes*
- *Between 16 and 30 minutes*
- *Between 31 and 60 minutes*
- *More than 60 minutes.*

Figure 3.5 and ***Figure 3.6*** show these categories respectively for arriving and departing traffic. 58% of the delayed arrivals and 56% of the delayed departures were delayed for a maximum of 15 minutes. 2% of the arriving flights in 2023 and 2% of the departing flights had a delay of more than one hour.

Figure 3.5: *Delayed IFR departures per category of delayed time in 2023*

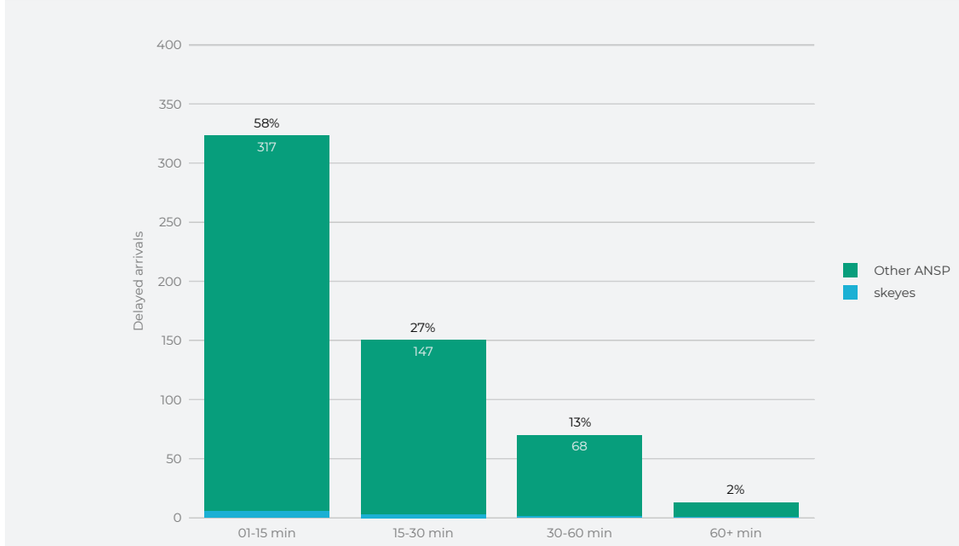
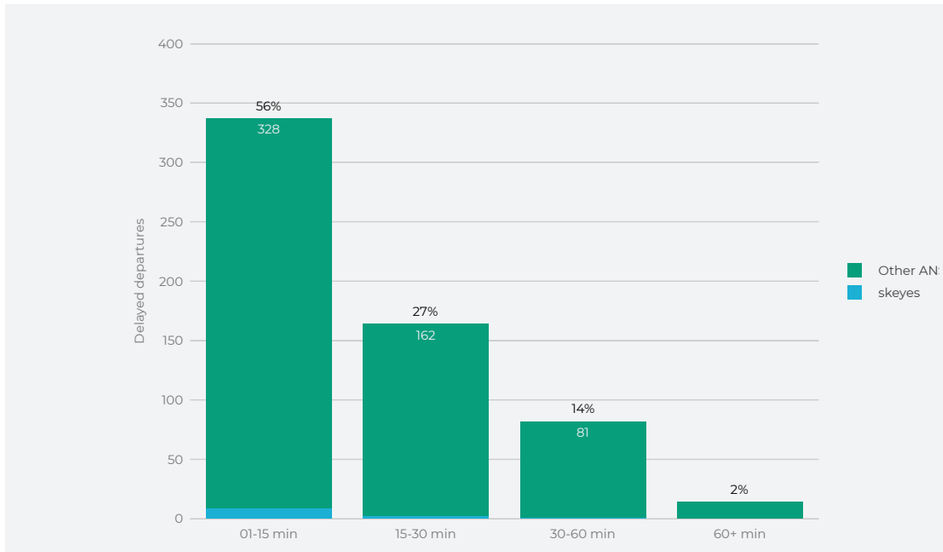


Figure 3.6: *Delayed IFR arrivals per category of delayed time in 2023*



Preferential Runway System (PRS)

Night Movements

Wind Pattern

ENVIRONMENT

As most airports, Ostend–Bruges International Airport is located near populated areas. It is therefore foremost important to consider noise and its reduction, as far as possible, in the vicinity of the airport. One of the ways to do so is to put in place a preferential runway system, a decision taken by the BCAA, which prioritises a runway use above the other, given that some conditions, mainly weather driven, are met.

This chapter will address, in the first part, the compliance to the preferential runway system in Ostend–Bruges International Airport, night movements, and will give an overview of wind speed and direction, as wind is a major factor in the choice of runway use.

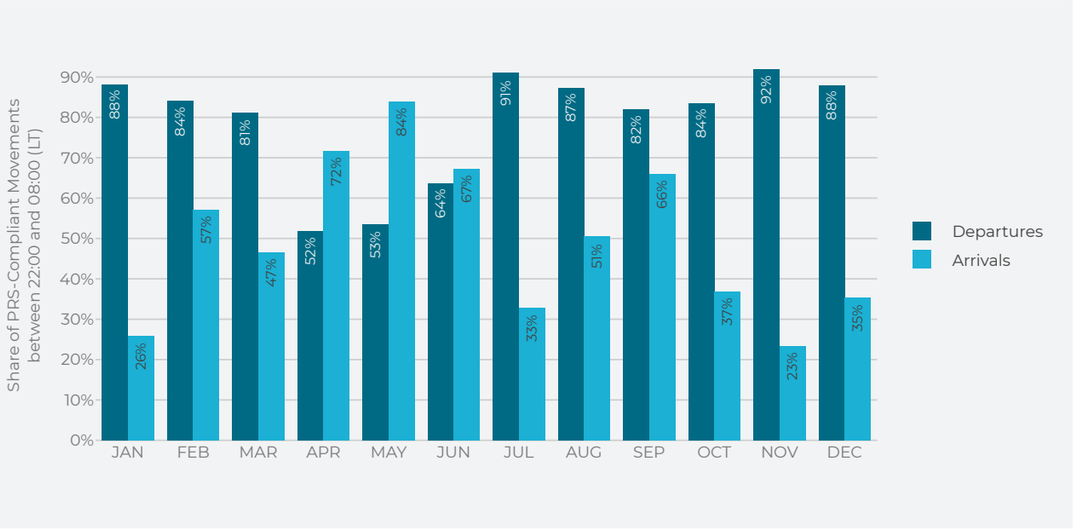
Preferential Runway System

A basic flight principle is that an airplane needs to take off and land windward. However, to choose the runway in use, skeyes must consider, in addition to the speed and surface wind direction, other factors such as environmental regulations, available navigation aids, or availability of taxiways. As published in the Aeronautical Information Publication (AIP) for Ostend–Bruges International Airport, between 22:00 and 08:00 local time, when the crosswind component - including gusts - does not exceed 15 knots, or the tailwind component - including gusts - does not exceed 5 knots and traffic permitting, runway 26 shall be used as preferred runway for take-off and runway 08 for landing. If the pilot-in-command considers the runway-in-use not usable for reasons of safety or performance, he/she shall request permission to use another runway. ATC will accept such request, provided that traffic and air safety conditions permit.

For safety reasons, if one of the above-mentioned conditions is not met, the Preferential Runway System (PRS) will not be followed and the most suiting runway in the given case will be used. ***Figure 4.1*** depicts the compliance to the PRS per month for the year 2023. Over the year, the PRS was followed by 78% for departures and 51% for arrivals. Combining departures and arrivals, the PRS was used for 66% of movements.

Strong winds in one direction generally mean that the PRS can only be active for either runway 26 or runway 08. April, May and June with mainly north-easterly winds show more PRS usage for arrivals while lowered usage for departures. Strong westerly winds decreased the usage of the PRS for arrivals in January, February, July and November.

Figure 4.1: *PRS compliance in 2023 for Ostend-Bruges Airport*



Night movements

Figure 4.2 shows the number of nighttime (23:00 – 06:00 local time) movements throughout the years. Night traffic decreased from 995 movements in 2022 to 878 movements in 2023. The main cause of the decline is a decrease of nightly cargo traffic which dropped from 462 movements in 2022 to 344 movements in 2023. This decrease is influenced by the partial move of Qatar Airways Cargo in April 2023[9]. The night traffic of Qatar Airways Cargo movements dropped from 109 movements in 2022 to 17 movements in 2023. Noteworthy is the decrease of night traffic for EgyptAir Cargo (from 177 movements in 2022 to 122 movements in 2023) while there is an increase of day traffic, indicating a shift from night to daytime.

Figure 4.2: *Yearly Nighttime (23:00 - 6:00 LT) Traffic*

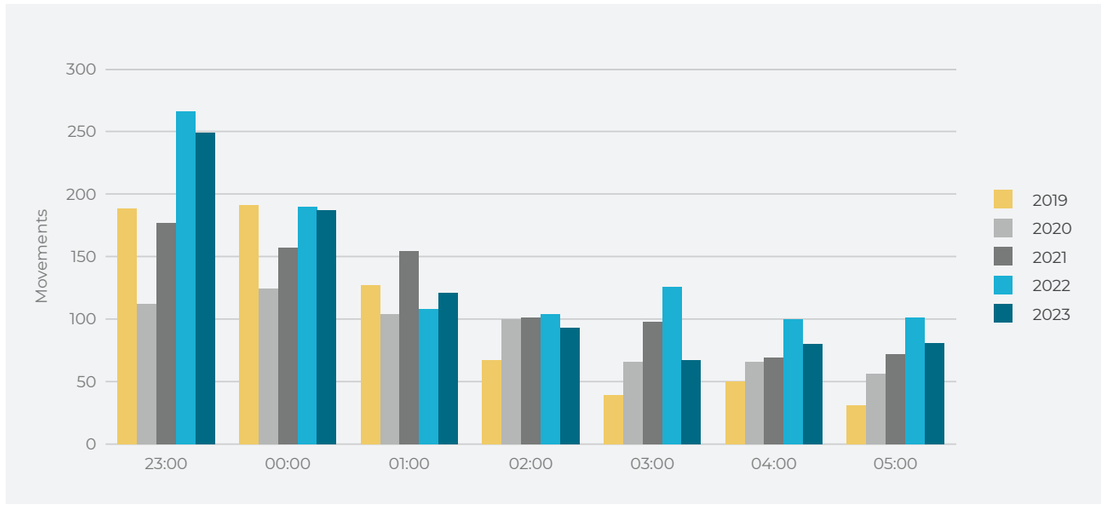


Table 4.1: *Yearly Nighttime (23:00 - 6:00 LT) Traffic*

Year	23:00	00:00	01:00	02:00	03:00	04:00	05:00
2019	188	191	127	67	39	50	31
2020	112	124	104	100	66	66	56
2021	177	157	154	101	98	69	72
2022	266	190	108	104	126	100	101
2023	249	187	121	93	67	80	81

9. https://www.ostendbruges-airport.com/ostend-bruges-airport-sees-passenger-numbers-rise-again-in-2023/

Wind Pattern

The annual wind speed and direction are illustrated in ***Figure 4.3***. In 2023, the wind patterns remained consistent with previous years, with an increase in the prevalence of westerly winds. The primary wind direction predominantly originated from the South-West. Strong wind occurrences were more frequent compared to both 2021 and 2022, aligning closely with the levels observed in 2020.

Figure 4.4 shows the wind roses per month. In April, May and June north-easterly winds prevailed and in September a higher frequency of easterly winds was recorded. This resulted in the high use of runway 08 in these months, as shown in ***Chapter 1***. South-westerly winds clearly prevail in the fall and winter months and this corresponds to the higher usage of runway 26. The strong winds mainly appeared in January and December.

Figure 4.3: *Yearly wind roses for Ostend-Bruges Airport from 2019 to 2023*

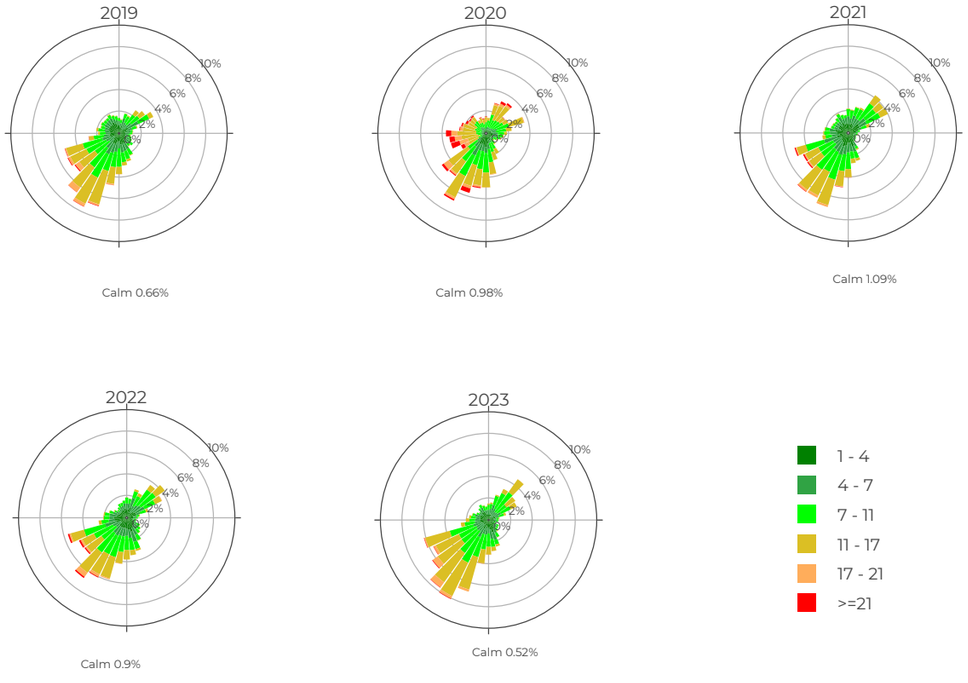
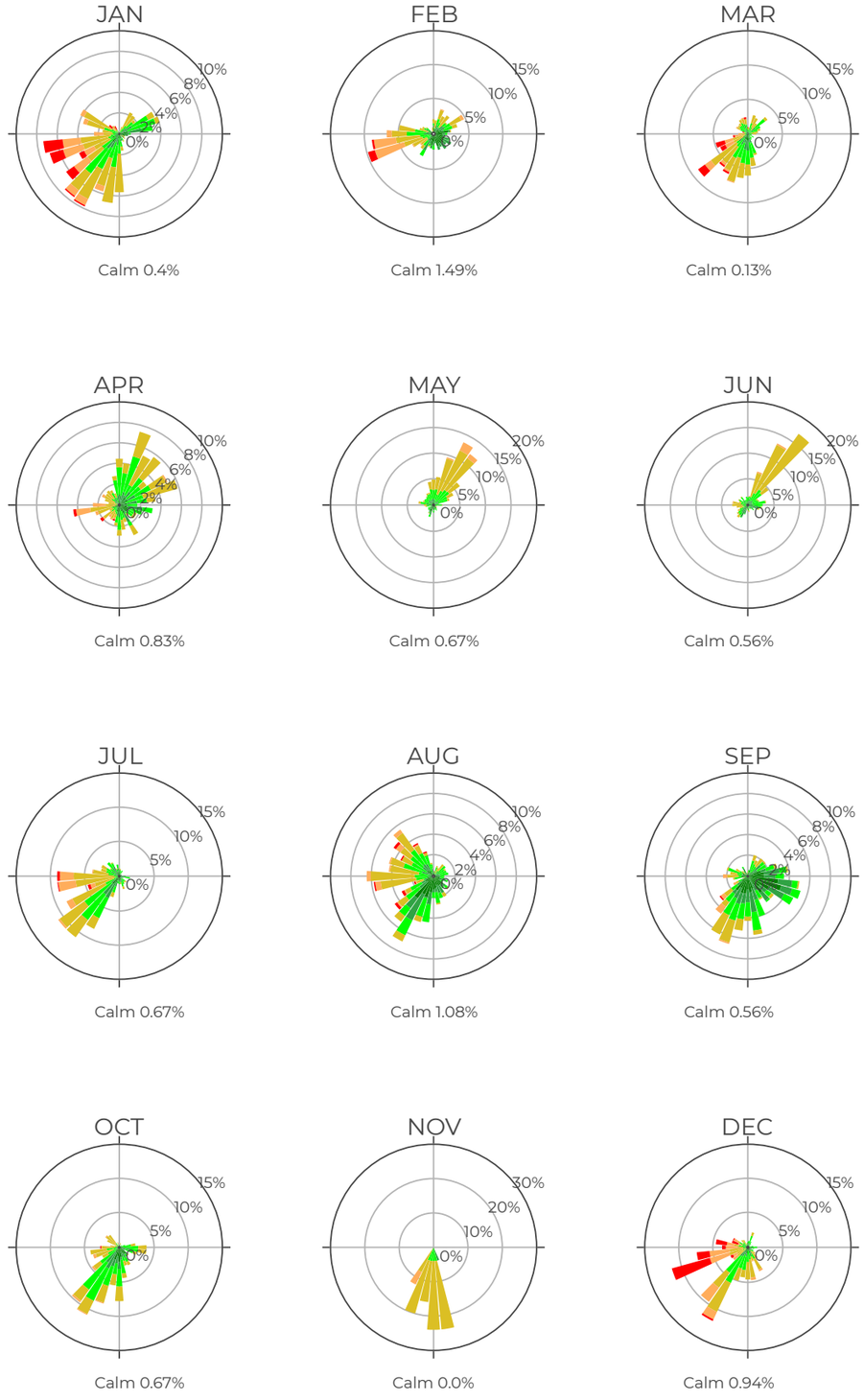


Figure 4.4: *Wind Roses for Ostend-Bruges International Airport per Month in 2023*



To conclude this chapter, it is important to mention that skeyes obtained the GreenATM level 3 accreditation in 2023. CANSO GreenATM is an environmental accreditation programme to provide air navigation service providers (ANSPs) with an independent, industry-endorsed, accreditation of their environmental efforts.

ANNEX Missed Approaches

Table A.1: *Causes for missed approaches per runway per year.*

	Reasons	2019	2020	2021	2022	2023
RWY 08	FOD (foreign object debris) on the runway	-	-	2	-	-
	aircraft with technical problems	-	-	-	-	-
	cabin crew not ready	1	-	-	-	-
	departing traffic on the runway	-	-	-	-	1
	other	-	-	-	1	1
	pilot's error	-	-	-	1	-
	previous landing on the runway	-	-	-	-	-
	runway condition	-	-	-	-	-
	tail wind	-	-	1	2	-
	taken out of sequence	-	-	-	-	-
	technical problems of ground equipment	-	-	-	-	-
	too close behind preceding	-	-	1	-	1
	unstable approach	6	1	3	2	4
	weather - thunderstorm - windshear	-	-	-	1	-
	weather - visibility	1	-	3	2	1
RWY 26	FOD (foreign object debris) on the runway	-	1	-	-	-
	aircraft with technical problems	-	-	1	1	1
	cabin crew not ready	-	-	-	-	-
	departing traffic on the runway	-	-	-	-	-
	other	-	-	-	3	1
	pilot's error	-	-	-	-	-
	previous landing on the runway	1	-	1	1	2
	runway condition	1	-	-	-	-
	tail wind	1	-	-	-	-
	taken out of sequence	-	-	-	-	1
	technical problems of ground equipment	-	1	-	-	-
	too close behind preceding	-	-	-	-	3
	unstable approach	3	1	3	3	4
	weather - thunderstorm - windshear	4	6	-	-	1
	weather - visibility	1	1	-	7	1

ANNEX Fact sheet

Yearly Evolution

- *Decrease (-8%) in cargo movements vs 2021. Still +96% from 2019*

Movements	2019	2020	2021	2022	2023	2023 vs 2022	2023 vs 2019
IFR	8,835	6,476	9,078	9,564	9,433	-1%	+7%
VFR	17,552	13,431	15,513	15,814	13,165	-17%	-25%
Total	26,387	19,907	24,591	25,378	22,598	-11%	-14%

Quarterly comparison

Movements	2019	2020	2021	2022	2023	2023 vs 2022	2023 vs 2019
Q1	5,057	4,758	5,535	5,044	4,804	-5%	-5%
Q2	7,353	3,924	7,122	6,977	6,274	-10%	-15%
Q3	7,207	7,184	7,626	7,774	6,582	-15%	-9%
Q3	6,770	4,041	4,308	5,583	4,938	-12%	-27%

Capacity

- Capacity exceeded on 4 days for 26-26 and on 1 day for 08-08 only due to VFR traffic. IFR capacity never exceeded.

Runway configuration	Declared IFR Capacity	Maximum Movements/Hour in 2023
08-08	33 movements/hour	36 movements/hour
26-26	34 movements/hour	37 movements/hour

Punctuality

Arrival delay:

- Arrival Delay: 0.07 min/flight
- CRSTMP delay: 0 min/flight

ATFM impact:

- Arrivals: 9,388 minutes ATFM delay (233 due to skeyes' regulations)
- Departures 10,068 minutes ATFM delay (131 due to skeyes' regulations)

Missed Approaches

22 missed approaches in 2023 (+16% vs. 2019)

TOP 3 causes in 2023:

1. Unstable approach (8)
2. Too close behind preceding (4)
3. H: Wx-visibility (2)

Safety Occurrences

- 9 runway incursions, of which two are with ATM contribution

PRS

- RWY26 – 63%
- RWY08 – 37%

Extensions of operational times

- The PRS was followed by 66% of the movements overall.

Night Movements

- 12% decrease in night movements, which was mainly due to sudden departure of Qatar Airways Cargo in April.

skeyes nice to guide you

Runway Performance Report **2023**

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