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Ostend–Bruges International

RUNWAY PERFORMANCE REPORT 2022

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EXECUTIVE SUMMARY

The world-wide aviation sector is on a rapid recovery and throughout Europe, traffic levels of 2019 are being reached. Ostend-Bruges Airport follows this trend by recovering up to 96% of 2019 traffic. 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 2022 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 has almost surpassed 2019 levels. skeyes controlled 25,378 movements at Ostend-Bruges Airport, an increase of 3% compared to 2021. Instrument flight rules (IFR) traffic saw the biggest increases: 5% since 2021 and 8% since 2019. Visual flight rules (VFR) traffic is lagging behind in the recovery and showed a 2% increase compared to 2021 but is still only at 90% of 2019 values. 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 2021, it is still almost doubled from 2019. As for the traffic patterns, there is an increase of early morning traffic compared to 2021, climbing back to 2019 levels, and an increase in night-time traffic compared to 2019.

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 2022, 24 missed approaches were logged, which is an increase of 60% compared to 2021. The rate of missed approaches per 1,000 arrivals increased by 58%. The main cause for missed approaches in 2022 was visibility, accounting for 38% of all missed approaches. skeyes and Ostend-Bruges International Airport have started a project to analyse where Instrument Landing System (ILS) installation improvements could be beneficial.

For safety occurrences, the report shows that the events logged on the ground increased since 2021 - in particular the taxiway incursions. The vast majority of the taxiway incursions are due to deviations from instructions provided by Air Traffic Control. There were only two runway incursions in 2022, none of which had ATM involvement.

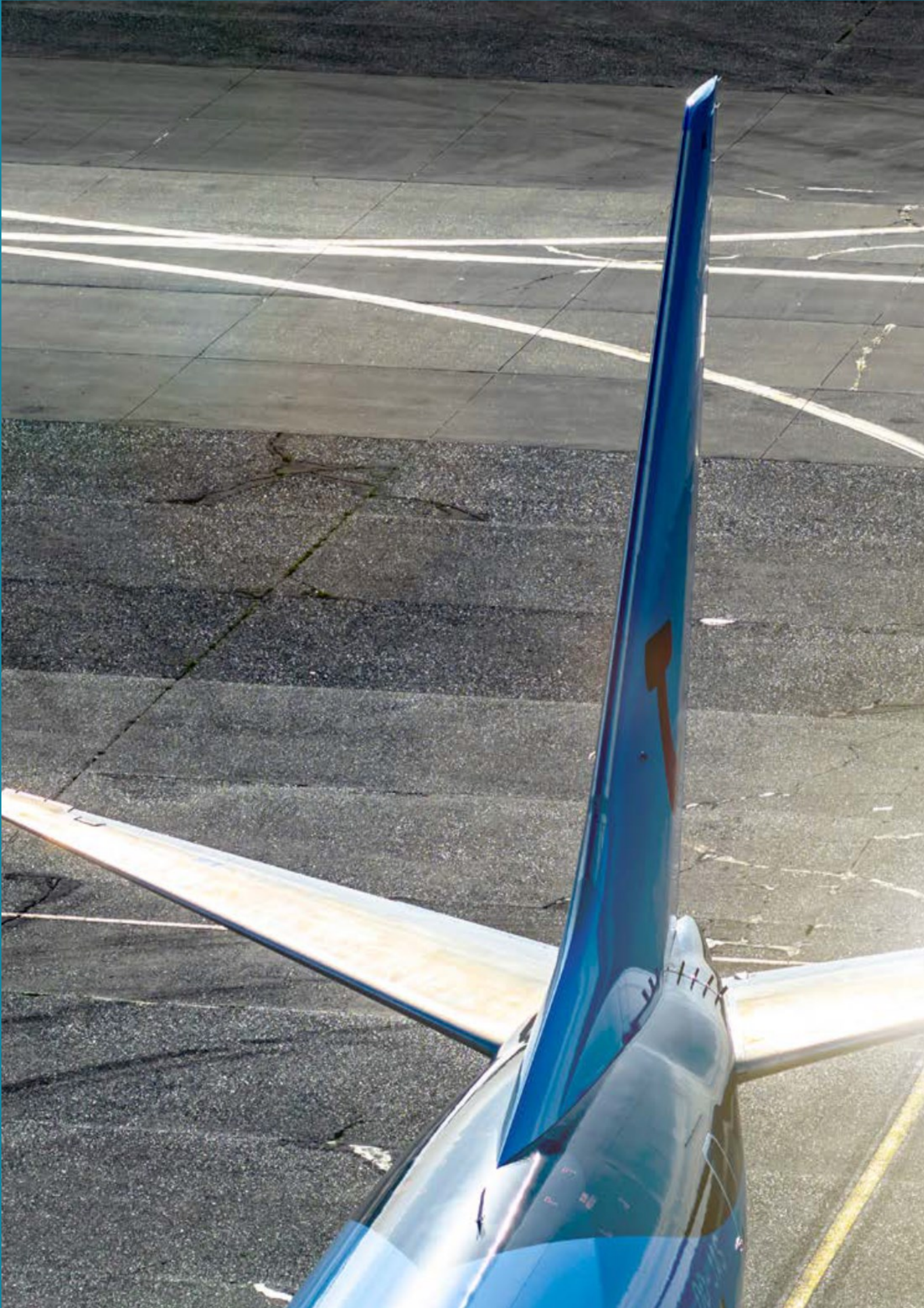
Capacity and Punctuality

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 2022, the declared capacity was exceeded on 14 occasions. All of these occasions had more than 60% VFR traffic.

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 2022, as in the previous three years, no ATFM arrival delay has been recorded in Ostend–Bruges International Airport. 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 2022, flights landing in Ostend–Bruges International Airport experienced a total of 7,864 minutes of ATFM delay, of which 504 were due to skeyes' regulations. Flights taking off from Ostend–Bruges International Airport totalled 8,231 minutes of ATFM delay: 466 minutes were attributable to skeyes' en-route regulations. The average delay per flight is still below 2019 levels.

Environment

In 2022, the Preferential Runway System (PRS) in place at night at Ostend–Bruges International Airport was complied with by 75.5% for departures and 59.6% for arrivals. In total, 68% of the movements used the PRS.



SAMENVATTING

De luchtvaartsector herstelt zich snel wereldwijd en in heel Europa worden de verkeersniveaus van 2019 bereikt. De Luchthaven Oostende-Brugge volgt deze trend en het verkeer veert op tot 96% van het niveau van 2019. Dit verslag geeft een overzicht van de prestaties inzake luchtverkeersbeheer (*Air Traffic Management*, ATM) op de internationale luchthaven van Oostende-Brugge.

De prestaties inzake luchtverkeersbeheer worden bepaald door vier kernprestatiegebieden (KPA's, *Key Performance Areas*): veiligheid, capaciteit, milieu en kostenefficiëntie. Dit verslag behandelt de activiteiten van skeyes op de internationale luchthaven van Oostende-Brugge. Het beoogt aan onze belangrijkste *stakeholders* verkeerscijfers voor 2022 en relevante gegevens over de prestaties van onze activiteiten op de luchthaven van Oostende-Brugge te verstrekken, namelijk over drie van de vier KPA's: veiligheid, capaciteit en stiptheid en milieu.

Verkeer

Het verkeersniveau op de internationale luchthaven van Oostende-Brugge heeft dat van 2019 bijna overtroffen. skeyes controleerde 25.378 bewegingen op de Luchthaven Oostende-Brugge, goed voor een stijging met 3% ten opzichte van 2021. Het Instrument Flight Rules (IFR)-verkeer maakte de grootste sprong voorwaarts: 5% sinds 2021 en 8% sinds 2019. Het Visual Flight Rules (VFR)-verkeer hinkt achterop in de herstelbeweging en vertoonde een stijging met 2% in vergelijking met 2021, maar blijft nog altijd steken op 90% van de waarden van 2019. Een belangrijke verandering op de internationale luchthaven van Oostende-Brugge is de groei in het vrachtverkeer sinds de COVID-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 2021, het bedraagt nog altijd bijna het dubbele van de cijfers uit 2019. De verkeerspatronen vertonen gelijkaardige trends, met een toename van het verkeer 's ochtends vroeg ten opzichte van 2021 en van het nachtverkeer ten opzichte van 2019.

Veiligheid

Veiligheid is een belangrijke pijler in de luchtverkeersleiding. Veiligheidsvoorvallen en afgebroken naderingen worden dan ook opgevolgd door de *safety unit* van skeyes, die de situaties en trends analyseert en, in voorkomend geval, onderzoek verricht.

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 veiligheid van de luchtvaartnavigatiedienstverlening te verbeteren. In 2022 werden 24 afgebroken naderingen geregistreerd, goed voor een stijging met 60% ten opzichte van 2021. Het aantal afgebroken naderingen per 1.000 aankomsten nam toe met 58%. De belangrijkste oorzaak van de afgebroken naderingen in 2022 was zichtbaarheid, goed voor 38% van alle afgebroken naderingen. skeyes en de internationale luchthaven van Oostende-Brugge hebben een project opgestart om te analyseren waar verbeteringen aan de ILS-installatie nuttig kunnen zijn.

Wat de veiligheidsvoorvallen betreft, toont het verslag aan dat de voorvallen, geregistreerd op de taxi-, start- en landingsbanen, zijn toegenomen sinds 2021, in het bijzonder de *taxiway incursions*. De overgrote meerderheid van de *taxiway incursions* is te wijten aan het afwijken van de instructies van de luchtverkeersleiding. Er deden zich slechts twee *runway incursions* voor in 2022, zonder ATM-betrokkenheid.

Capaciteit en stiptheid

Capaciteit is een van de KPA's en in dit verslag wordt de opgegeven IFR-capaciteit aangeduid, samen met een overzicht van de mate waarin de capaciteit benut wordt. In 2022 werd de opgegeven capaciteit 14 keer overschreden, telkens met meer dan 60% VFR-verkeer.

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 2022 is, net als in de drie voorgaande jaren, geen ATFM-vertraging bij aankomst opgetekend op de internationale luchthaven van Oostende-Brugge. 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 2022 hebben aankomende vluchten op de internationale luchthaven van Oostende-Brussel in totaal 7.864 minuten ATFM-vertraging opgelopen, waarvan 504 aan skeyes' reguleringen toe te schrijven waren. Vertrekkende vluchten vanaf de internationale luchthaven van Oostende-Brugge telden in totaal 8.231 minuten ATFM-vertraging: 466

daarvan waren toe te schrijven aan en-route-reguleringen door skeyes. De gemiddelde vertraging per vlucht ligt nog altijd onder het niveau van 2019.

Milieu

In 2022 werd het systeem van preferentieel baangebruik (*Preferential Runway System*, PRS) dat 's nachts op de internationale luchthaven van Oostende-Brugge van kracht is, voor 75,5% van de vertrekkende vluchten en voor 59,6% van de aankomende vluchten nageleefd. In totaal maakte 68% van de bewegingen gebruik van het PRS.

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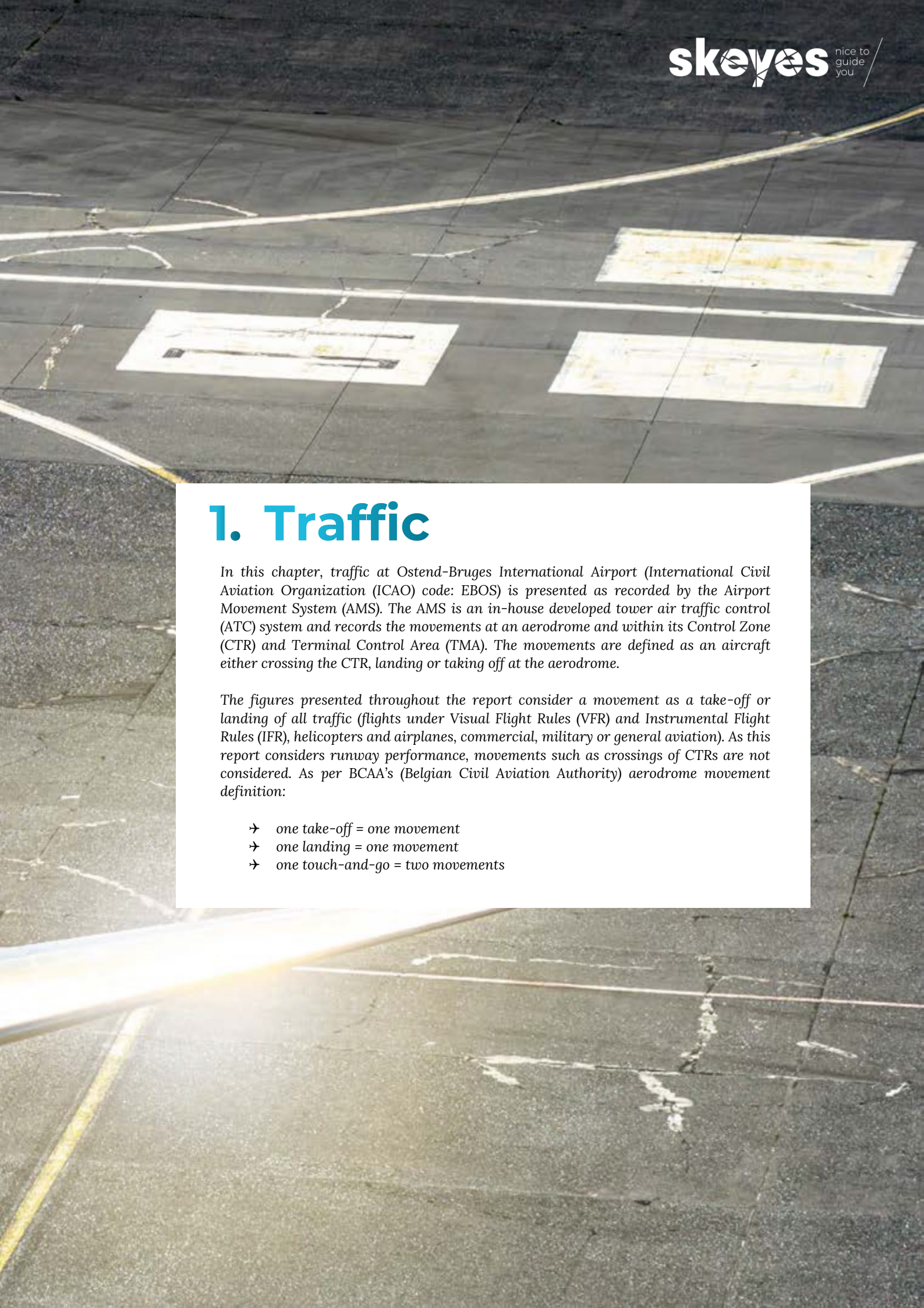
GLOSSARY

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
LRST:	Local Runway Safety Team
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



1. 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, 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 movement*
- *one landing = one movement*
- *one touch-and-go = two movements*

Traffic Overview

The number of aircraft movements for the last four 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)

Traffic records registered in Ostend–Bruges International Airport in the year 2022 are close to 2019 levels, before the impact of COVID-19 crisis. There was an overall increase of traffic of 3% in 2022 compared to 2021. Traffic in 2022 recovered to 96% of 2019 traffic, pre-COVID-19 pandemic. Traffic numbers and trends can be found in Figure 1-1 and Table 1-1 below.

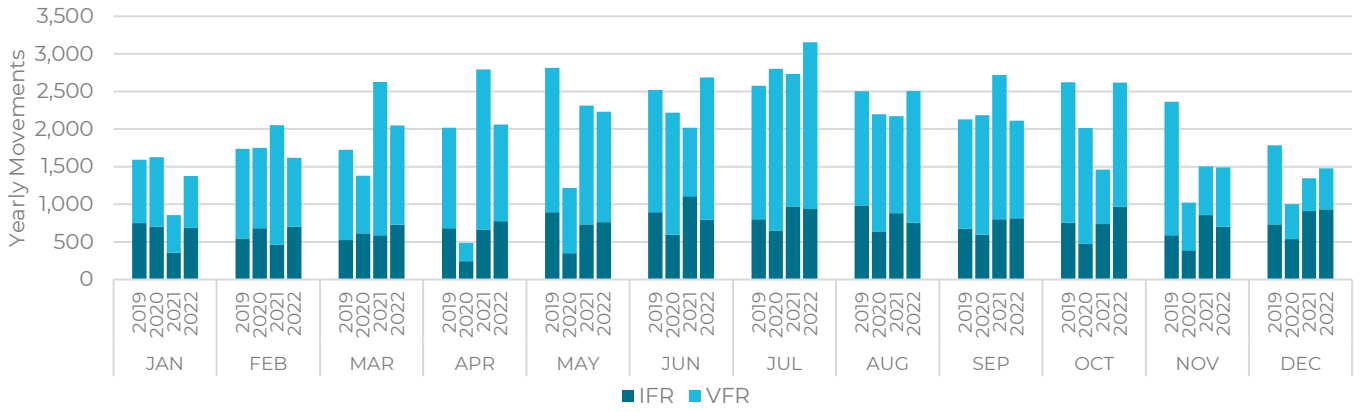


Figure 1-1: Monthly Movements per Year and Flight Rule at Ostend-Bruges Airport

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**
	2022 *vs* 2019	-9%	+29%	+39%	+13%	-15%	-11%	+17%	-23%	+20%	+28%	+20%	+27%	**+8%**
	2022 *vs* 2021	+91%	+51%	+24%	+17%	+4%	-28%	-3%	-14%	+2%	+31%	-18%	+2%	**+5%**
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**
	2022 *vs* 2019	-18%	-23%	+10%	-4%	-23%	+16%	+25%	+15%	-11%	-12%	-56%	-48%	**-10%**
	2022 *vs* 2021	+40%	-42%	-35%	-40%	-7%	+108%	+26%	+36%	-32%	+129%	+21%	+26%	**+2%**
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**
	2022 *vs* 2019	-14%	-7%	+19%	+2%	-21%	+7%	+23%	+0%	-1%	-0%	-37%	-17%	**-4%**
	2022 *vs* 2021	+61%	-21%	-22%	-26%	-3%	+33%	+15%	+15%	-22%	+79%	-1%	+10%	**+3%**

VFR flights account for most of the traffic (approximately two-thirds) in Ostend–Bruges International Airport and show an increase of 2% compared to last year, with the highest increase, +129%, in October 2022. New restrictions due to COVID-19 started in October 2021, which explains the sudden drop in VFR flights last year. Looking at IFR flights, there is an increase of 5% compared to 2021. Compared to 2019, there is an increase of 8% in IFR traffic in 2022. The first few months of the year show the largest increase in flights because of the lockdown that lasted until April 2021.

Similar trends can be observed in the arrival and departure traffic numbers, as pictured in Table 1-2.

Table 1-2: Monthly Arrival and Departure Figures from 2019 to 2022

		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
DEP	**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**
	2022 *vs* 2021	+61%	-21%	-22%	-26%	-3%	+33%	+15%	+15%	-23%	+77%	-1%	+10%	+3%
ARR	**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**
	2022 *vs* 2021	+61%	-21%	-22%	-26%	-4%	+33%	+16%	+16%	-22%	+81%	-1%	+9%	+3%

In total, traffic in Ostend–Bruges International Airport did not yet reach the numbers of 2019. However, the months March and July showed a positive trend compared to 2019. During the last years, the airport invested in upgrading its infrastructure with a newly renovated apron, which opened in August 2022. The Flemish government has approved to support and keep the airport open up to 2040.

A calendar with daily movements can be seen in Figure 1-3. The calendar shows that the busiest days of the year were February 26th and October 6th. As shown in the calendar view, the winter season is the period with the lowest traffic. This is mainly due to a decrease in VFR traffic during this season.

Traffic Patterns

Figure 1-2 and Figure 1-4 show the average flights per hour for the IFR and VFR traffic respectively. The main difference between VFR and IFR active hours is the clustering of VFR flights in the late morning till evening, while for IFR there is a peak in the early morning hours.

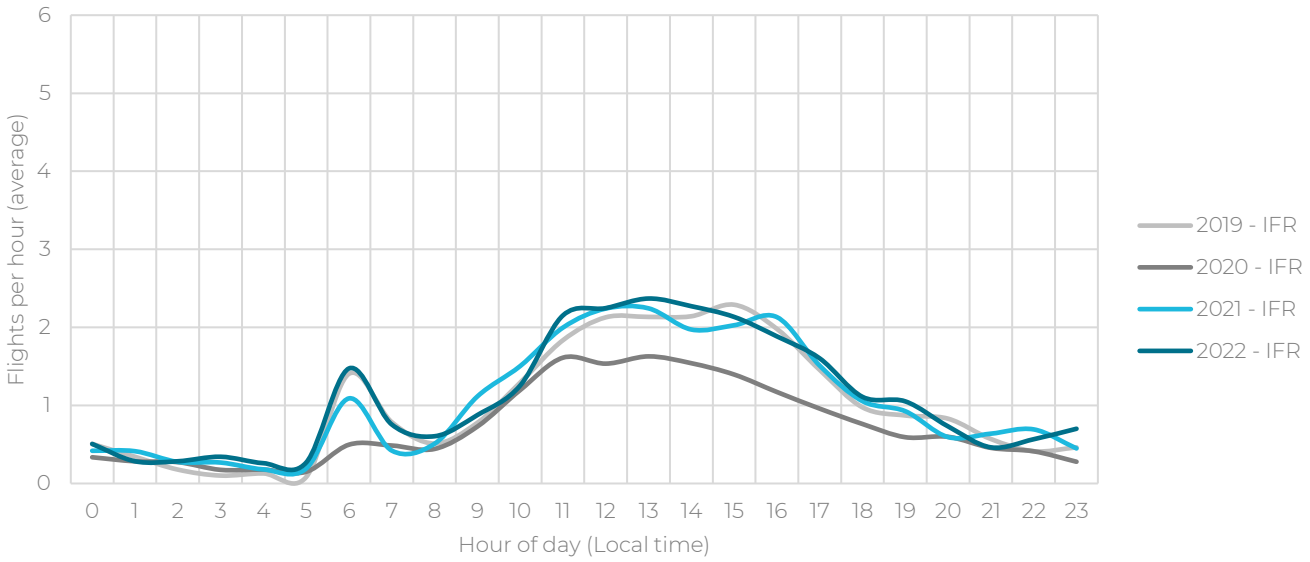


Figure 1-2: Distribution of IFR Flights over the Day

36	24	129	53	9	106	32	16	67	44	69	69	17	25	116	40	52	77	86	98	34	59	18	80	102	76	88	119
55	88	20	25	30	62	53	44	44	82	96	91	102	118	133	72	47	34	102	123	28	48	83	172	81	164	138	125
47	45	52	100	67	94	39	103	59	80	46	90	84	23	95	79	69	77	113	75	84	46	42	165	86	101	184	72
81	9	37	51	24	83	35	73	43	66	70	85	27	19	135	63	84	46	128	36	60	51	134	150	117	42	53	139
77	51	87	40	30	105	10	87	80	37	69	54	23	152	113	50	65	92	80	10	137	43	131	185	114	144	184	170
15	25	10	46	19	43	77	13	208	41	72	118	188	88	95	39	76	55	105	59	142	125	79	76	118	86	95	97	121
16	43	18	26	43	22	27	11	58	39	19	45	22	33	32	45	24	24	31	44	53	22	18	49	22	54	55	69	50
Jan					Feb				Mar				Apr				May					Jun					Jul

Figure 1-3: Calendar View of Daily Movements in 2022

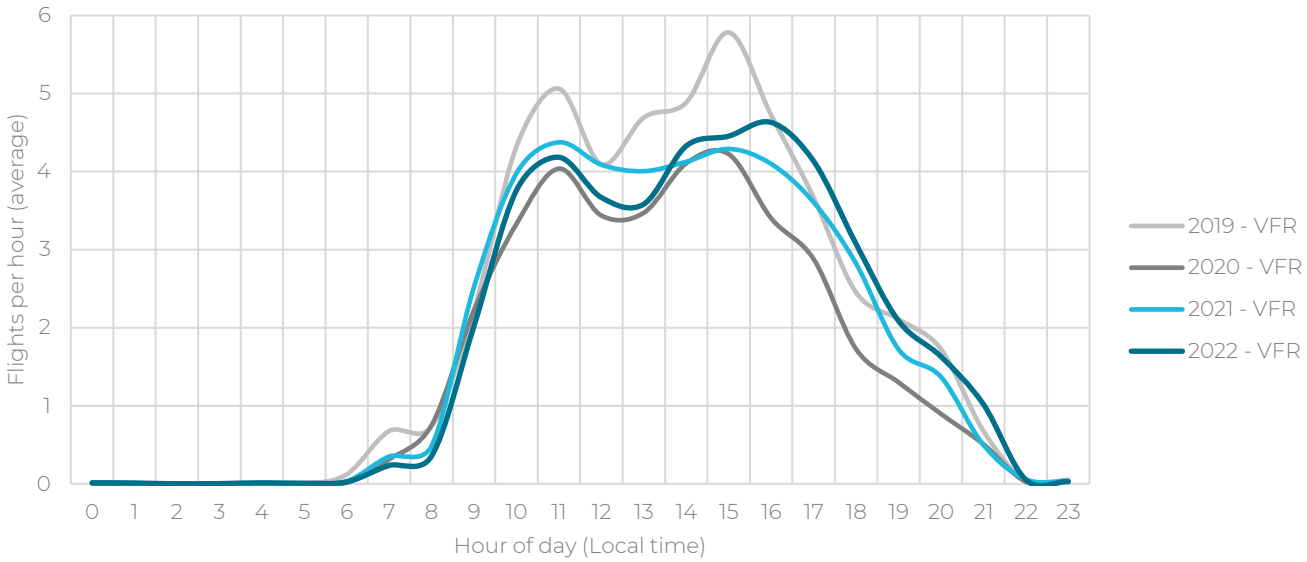
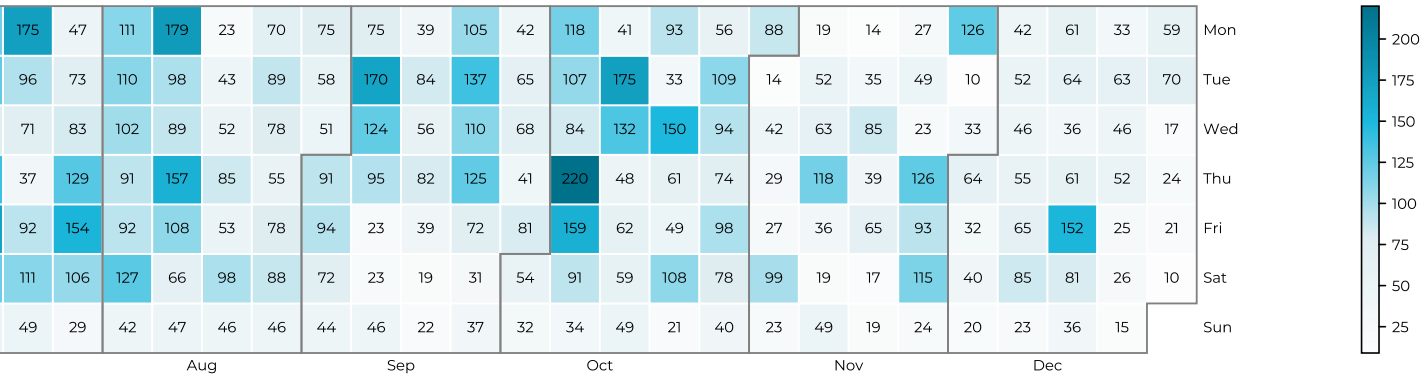


Figure 1-4: Distribution of VFR Flights over the Day



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 1-5.

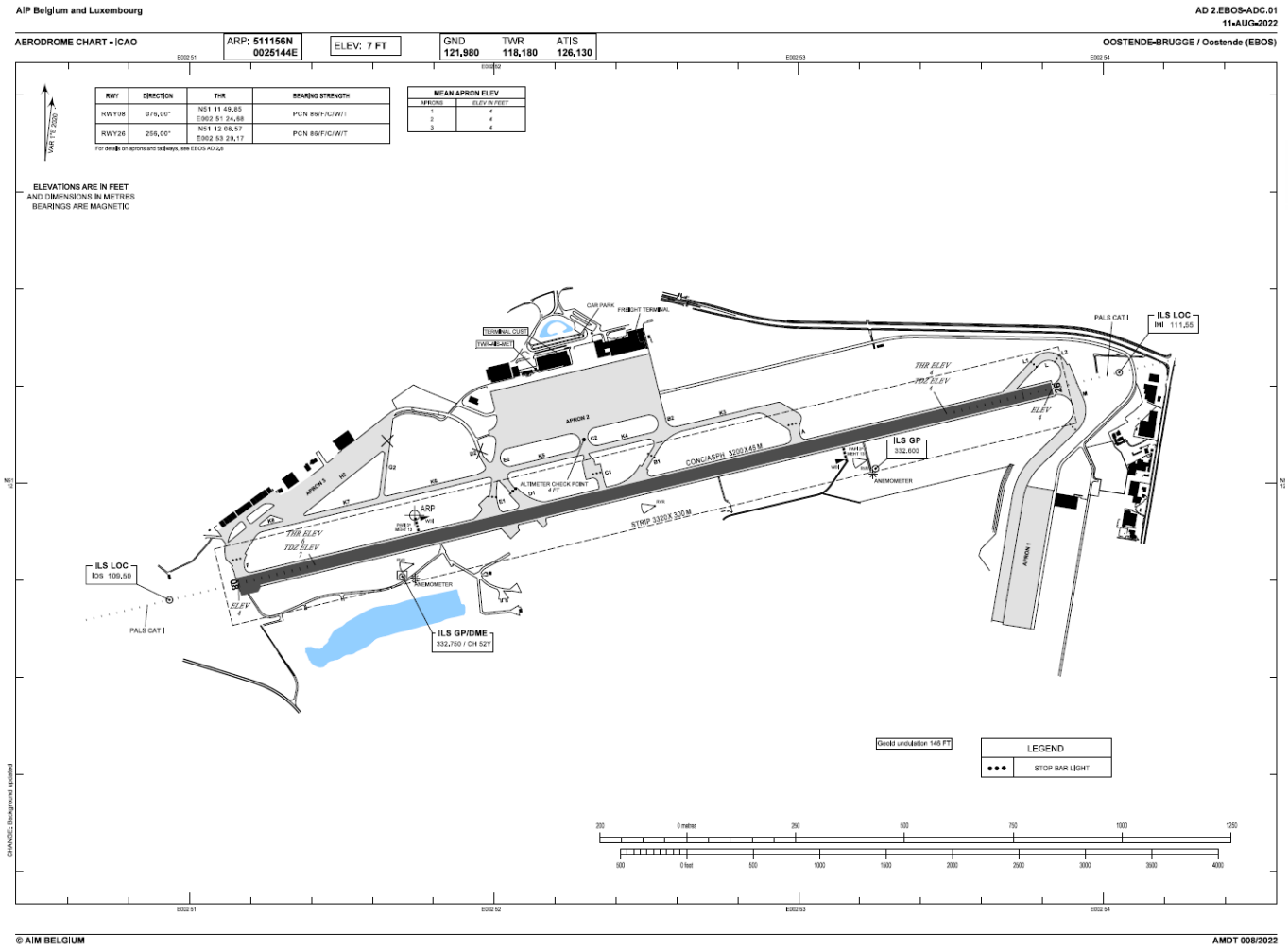
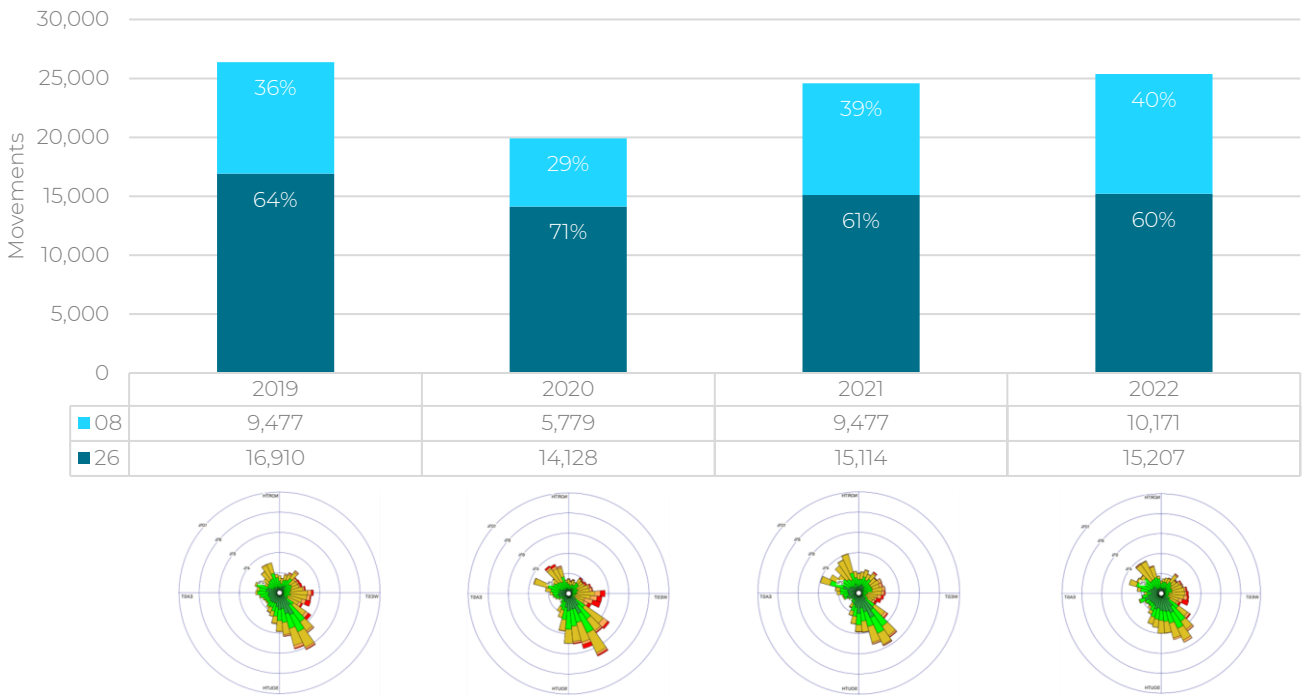


Figure 1-5: ICAO Aerodrome Chart of Ostend-Bruges International Airport

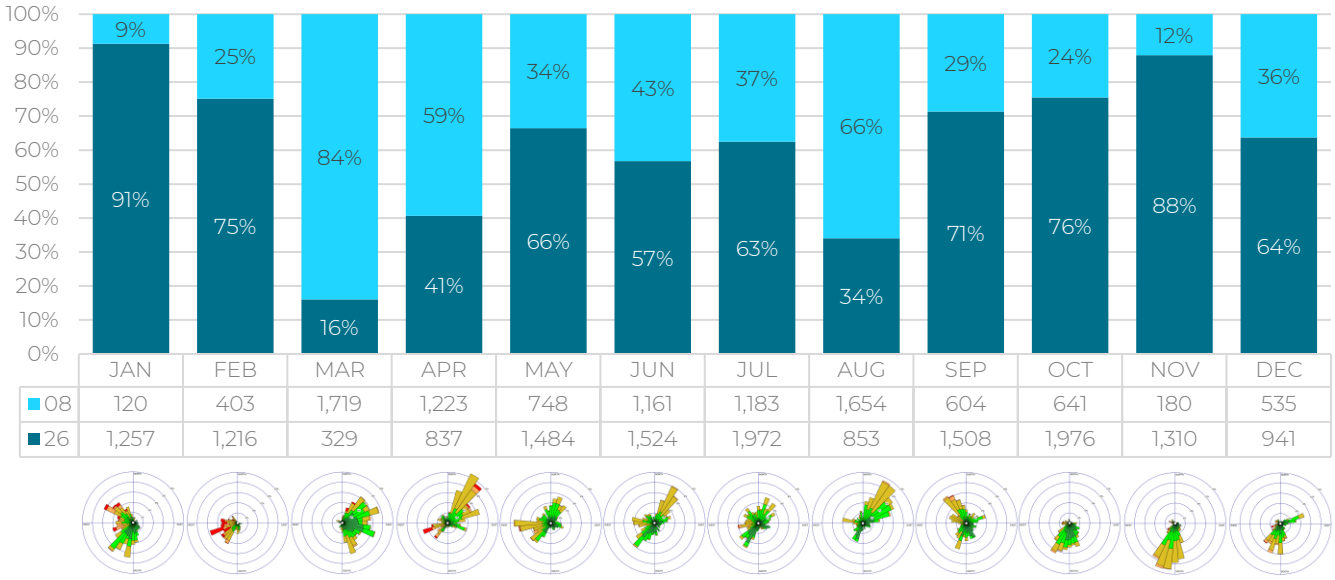
The use of one runway configuration over another depends on several factors that must be taken into account, such as wind direction and proximity to densely populated areas. Figure 1-6 shows the runway use in Ostend–Bruges International Airport since 2019 with the wind rose below each year. Overall, in 2022, 58% of the arrivals and 63% of the departures were performed on runway 26. Ostend-Bruges International Airport has a PRS during evening and night hours. More information on this can be found in Chapter 4.



	2019	2020	2021	2022
08	9,477	5,779	9,477	10,171
26	16,910	14,128	15,114	15,207

Figure 1-6: Runway Use at Ostend-Bruges Airport from 2019 to 2022

Figure 1-7 below shows the runway use per month of 2022 and the wind rose for each month. March, April, and August showed distinct, different wind patterns to the adjacent months, resulting in a much higher usage of runway 08. Wind direction is the main factor for the choice of runway configuration. In March, April, and August the wind was mainly blowing from the North-East, which also explains the exceptionally high usage of runway 08 during this month. January, February, and the last four months of the year had an opposite trend, with more and stronger south-westerly winds. Larger images of the wind roses can be found in Chapter 4.



	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
08	120	403	1,719	1,223	748	1,161	1,183	1,654	604	641	180	535
26	1,257	1,216	329	837	1,484	1,524	1,972	853	1,508	1,976	1,310	941

Figure 1-7: Runway Use and Wind Distribution at Ostend-Bruges Airport per Month in 2022

Drone Activities

The challenges and opportunities associated with the expected widespread growth of unmanned aerial vehicles will be one of the factors driving the future of Air Navigation Service Providers (ANSP). Early 2020, the company SkeyDrone was created as subsidiary of skeyes. SkeyDrone envisages to play a central role in the implementation of U-space, a set of specific services and procedures designed to ensure safe and efficient access to airspace for a large number of drones, in Belgium. SkeyDrone offers a wide variety of services that enable safe and efficient drone operations in all types of airspace. Those services are provided to authorities – such as managers of Unmanned Aircraft System (UAS) geographical zones – and operators of critical infrastructure – such as ports, nuclear plants, prisons and industrial sites. It provides soft- and hardware-based solutions that allow to manage safety & security related risks associated with drone flights in and around their areas of responsibility. SkeyDrone also supports drone operators – both large and small companies, as well as government agencies – in order to offer solutions that allow to plan and execute flights in the safest and most efficient ways[1].

The UAS geographical zones, also called "GeoZones" are only accessible to drones complying with technical and operational criteria, as well as restrictions with regard to the use of these drones. Therefore, to facilitate planning, coordination and information flow between drone operators and Air Traffic Control, SkeyDrone has implemented a web application: the Drone Service Application (DSA). The two main objectives of DSA are to simplify the planning process for drone operators, and to visualize the planned drone operations for skeyes, which is the GeoZone manager for controlled airspace above and around the airports of Antwerp, Brussels, Charleroi, Kortrijk, Liège and Ostend–Bruges[2]. This source is used to show the drone activity in the following figures of this section.

Figure 1-8 displays the number of drone activities and the level of risk involved in the operations per airport. These categories are defined by the risk the drone activity forms for manned aviation in very low level (VLL) 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 above aerodrome elevation, outside the moderate and high-risk zone

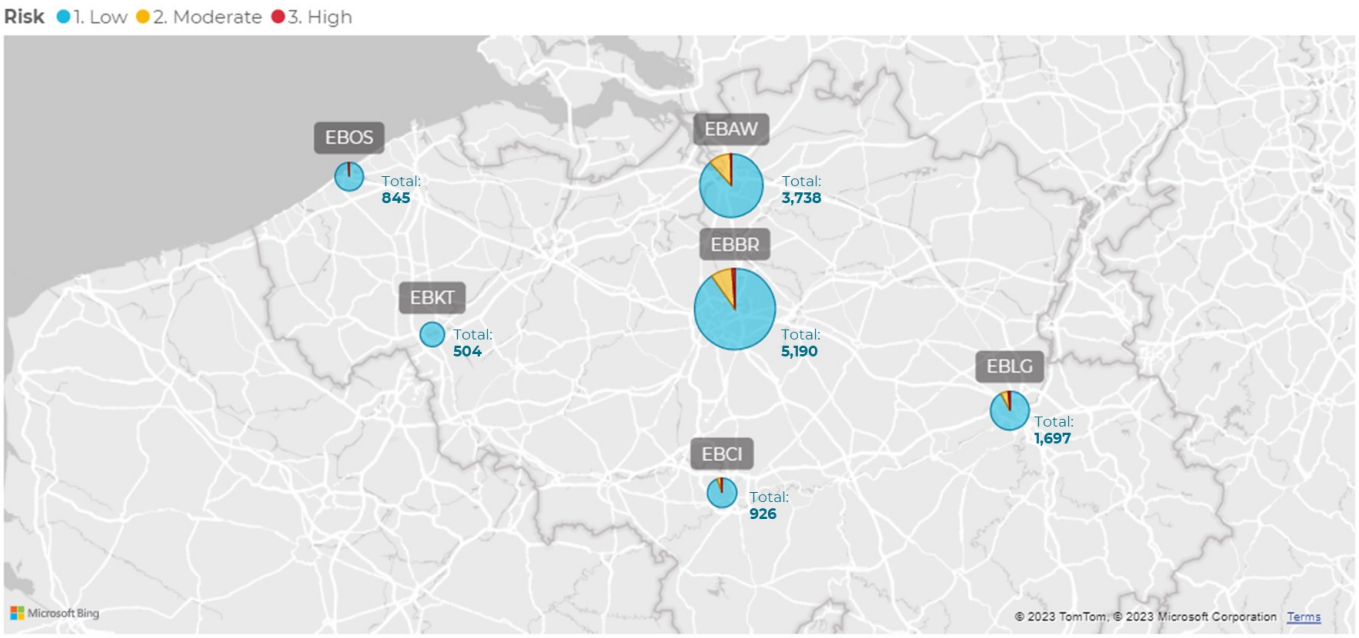


Figure 1-8: Authorized Drone Activities in 2022 at the Airports where skeyes provides Air Traffic Services

[1] SkeyDrone, "Enabling safe drone operations", 2022. https://SkeyDrone.aero/ (URL retrieved on 10/02/2023)

[2] UAS geographical zone statuses can be seen at https://map.droneguide.be (URL retrieved on 10/02/2023)

Those activities can be classified by level of risk involved in the operations. There are three such categories, which are described as follows (as per EASA definition)[3]:

Open: Presents low risk to third parties. An authorization 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. An authorization is required from the CAA.

Former Class 1: Very complex operations, presenting an equivalent risk to that of manned aviation.

In Ostend-Bruges International Airport's area, there were 845 drone activities recorded in 2022, a decrease of 42% compared to last year. The drop of -42% in Ostend (EBOS) is largely due to the end of SABCA operations. In Ostend–Bruges International Airport, 652 (77%) drone activities operated under the Open category. 182 (22%) were registered as Specific, and eleven (1.3%) were flown as Certified.

Table 1-3 provides an overview of the complexity of operations at Ostend–Bruges International Airport and the other five airports, where skeyes provides services. Figure 1-9 gives an overview on the drone operations in Ostend–Bruges International Airport per day in 2022.

Table 1-3: Drone Activities in Belgium per EASA Risk Category in 2022

	2022				2021	2022 vs 2021
	OPEN	SPECIFIC	FORMER CLASS 1[4]	Total	Total	
EBBR	3,481	1,709		**5,190**	**4,530**	+15%
EBCI	581	345		**926**	**731**	+27%
EBLG	1,161	536		**1,697**	**852**	+99%
EBOS	652	182	11	**845**	**1,451**	-42%
EBAW	2,557	1,181		**3,738**	**4,157**	-10%
EBKT	333	163	8	**504**	**610**	-17%
Total	8,765	4,116	19	**12,900**	**12,331**	+5%

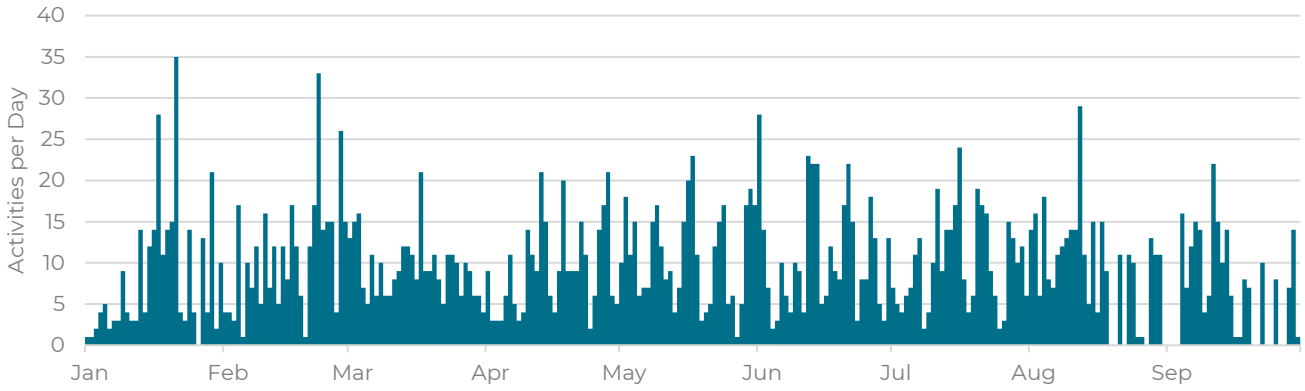


Figure 1-9: Distribution of Drone activities in Ostend–Bruges International Airport in 2022

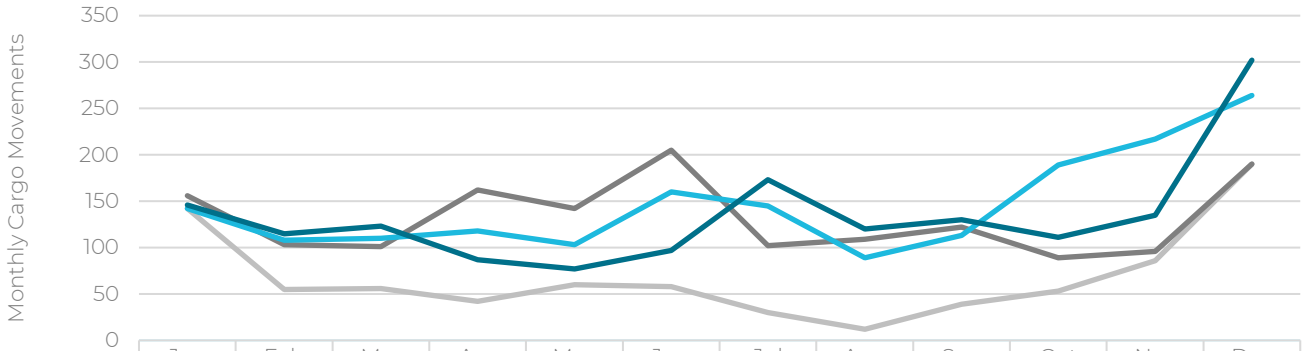
[3] EASA, "Drones - regulatory framework background", https://www.easa.europa.eu/domains/civil-drones/drones-regulatory-framework-background (URL retrieved on 10/02/2023)

[4] Since 31/12/2020, the EU Drone Regulation has been in force in Belgium and old licenses for FORMER CLASS 1 operations expired a year after, i.e. at the end of 2021. Thus, no operations in the FORMER CLASS 1 category should have taken place in 2022 – yet some records can be found in the logs of the DSA. For further information, contact skeydrone.

Cargo

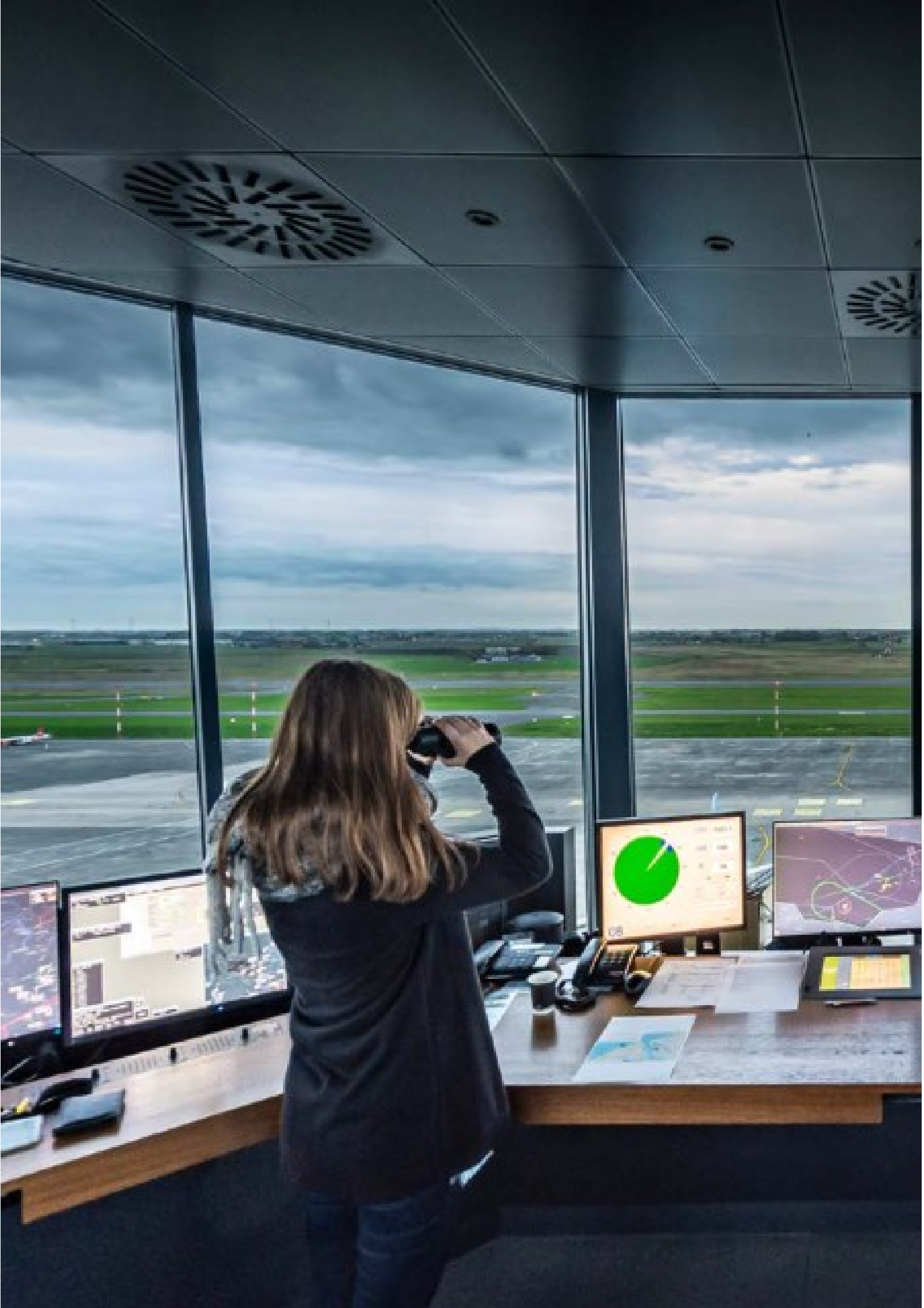
Ostend-Bruges International Airport is holding steady in a post-COVID-19 situation. Based on air traffic market segment rules (STATFOR/EUROCONTROL) and flight plan information captured by skeyes' airport movement system, the number of cargo operations can be estimated. The EUROCONTROL's Market Segment 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. The results show that the number of cargo movements have decreased from 2021 by 8%, but it is still almost double compared to 2019 (+96%). The market share of cargo movements of all IFR flights in Ostend has decreased from 19.4% in 2021 to 16.9% in 2022. This decrease in market share is mostly due to the increase of other IFR traffic. In 2019, the number of cargo flights was about 800 with a market share of 9.3% of IFR movements. In order to accommodate the increase in cargo traffic, Ostend-Bruges Airport equipped its cargo hub with a digital cloud solution – an investment for the future.

Figure 1-10 shows the cargo traffic throughout the months. From 2020 onwards, we see a drastic increase in the amount of cargo traffic, which has held steady even after the COVID-19 crisis. The busiest month has always been December and this remains to be the case.



	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2019	142	55	56	42	60	58	30	12	39	53	86	190
2020	156	103	101	162	142	205	102	109	122	89	96	190
2021	142	108	110	118	103	160	145	89	113	189	217	264
2022	146	115	123	87	77	97	173	120	130	111	135	302

Figure 1-10: Monthly Cargo Traffic at Ostend-Bruges International Airport from 2019 to 2022



2. 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: Safety 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 air traffic control (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)

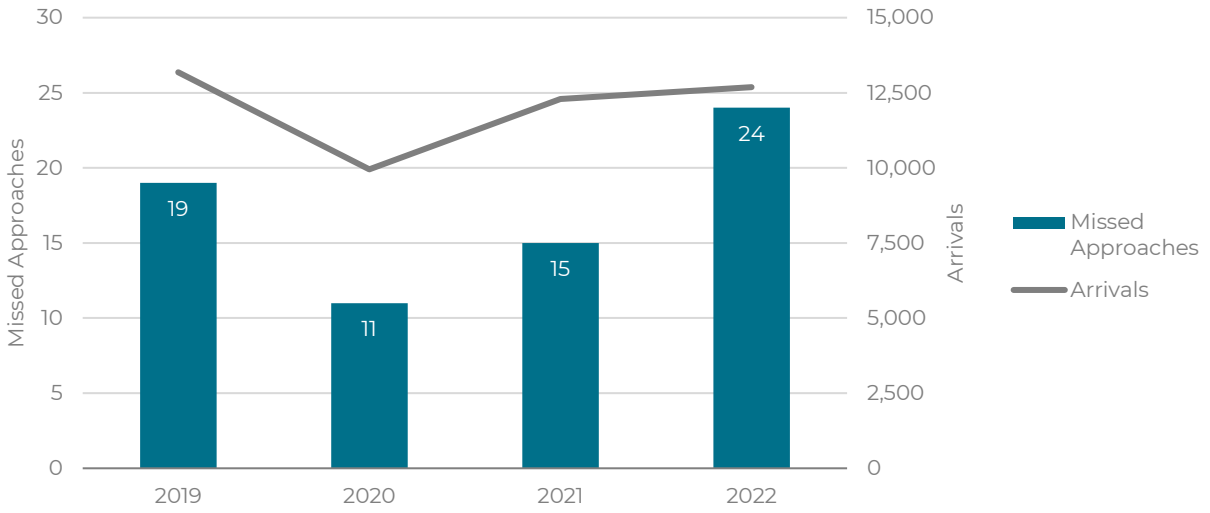


Figure 2-1: Missed Approaches at Ostend-Bruges Airport from 2019 to 2022

A better comparison between years can be seen in Figure 2-2, which shows the rate of missed approaches per 1,000 arrivals. From this graph, it is clear that the rate of missed approaches on runway 26 is much higher than in previous years.

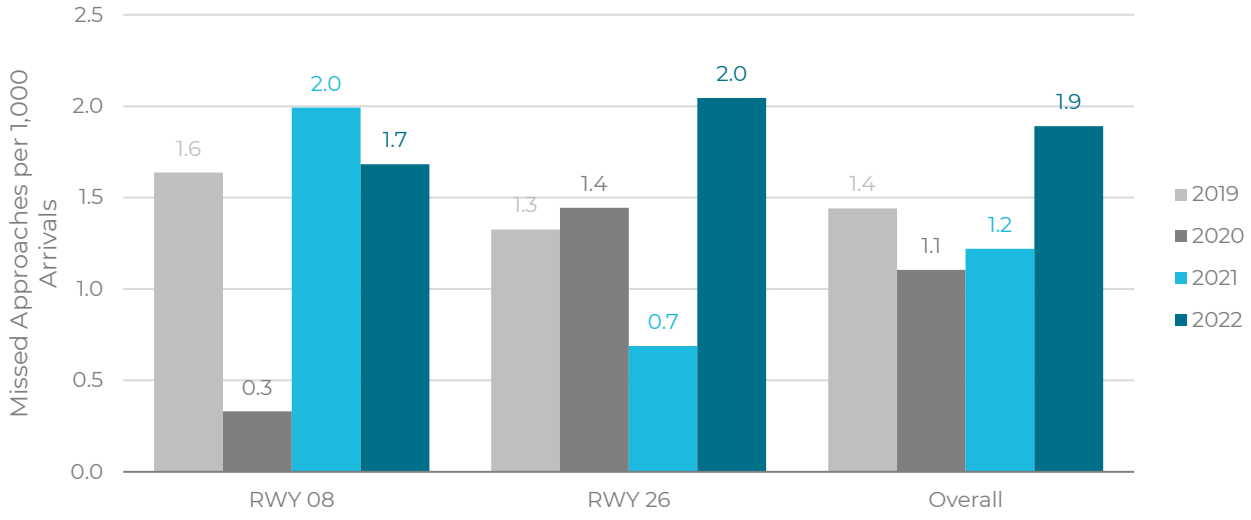


Figure 2-2: Missed Approaches per 1,000 Arrivals per Runway since 2019 at Ostend-Bruges Airport

The top reason for missed approaches in 2022 is lack of visibility. Ostend-Bruges International Airport is the only airport controlled by skeyes where this is the top reason for missed approaches. This can be explained since there is a large amount of VFR traffic and the airport does not have a Cat-III ILS. A detailed look at the top reasons from the past years can be seen in Table 2-2.

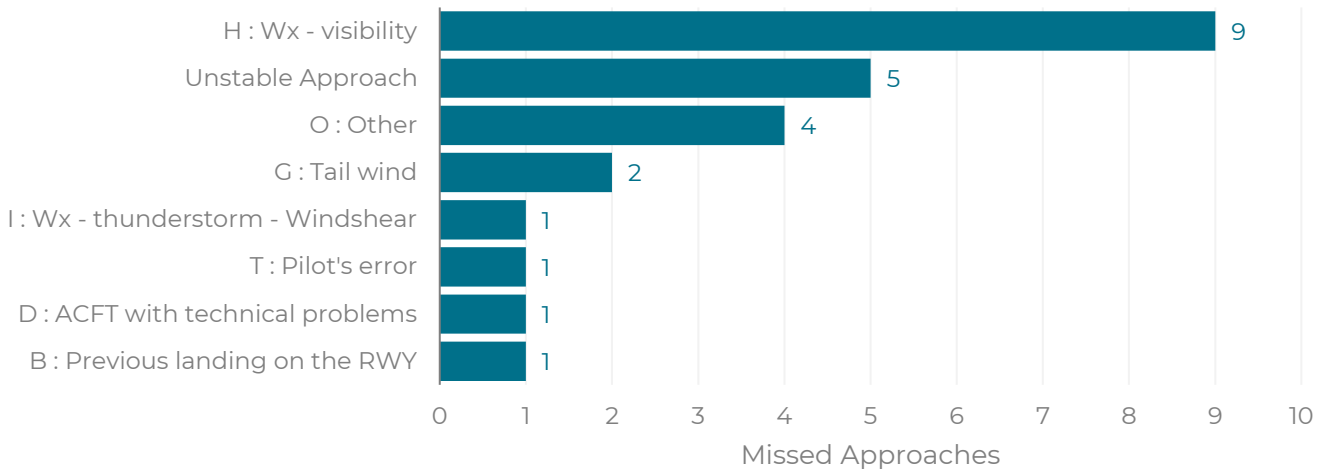


Figure 2-3: Causes for Missed Approaches in 2022 at Ostend-Bruges Airport

Table 2-2: Occurrence of Missed Approaches of Top 5 Causes in 2022 per Runway and Year

Top 5 causes in 2022 RWY 08	2019	2020	2021	2022
Total Missed Approaches	8	1	10	9
G : Tail wind			1	2
Unstable Approach	6	1	3	2
H : Wx - visibility	1		3	2
O : Other				1
T : Pilot's error				1
Share of top 5 causes of 2022	88%	100%	70%	89%

Top 5 causes in 2022 RWY 26	2019	2020	2021	2022
Total Missed Approaches	11	10	5	15
H : Wx - visibility	1	1		7
Unstable Approach	3	1	3	3
O : Other				3
D : ACFT with technical problems			1	1
B : Previous landing on the RWY	1		1	1
Share of top 5 causes of 2022	45%	20%	100%	100%

Three missed approaches due to lack of visibility happened with the same aircraft, an Embraer 190, when the visibility was less than 700m. Two more missed approaches due to low visibility involved a B737-Max, after which it was diverted to Brussels Airport. Six flights were diverted to different airports after their missed approaches, four of which were due to low visibility. In total, 10 missed approaches were related to unfavourable weather conditions.

A project has been started to analyse where ILS installation improvements could be beneficial. This should reduce the number of missed approaches due to low visibility.

Runway Incursions (RI)

There is a Local Runway Safety Team (LRST) at Ostend–Bruges International Airport, which 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 2022, two RIs have been registered in Ostend–Bruges International Airport, of which none were with Air traffic management (ATM) contribution. The first runway incursion was due to a pilot taking off without clearance. The second runway incursion was due to the back of an aircraft not having cleared a holding point, which resulted in a go-around for an inbound aircraft.

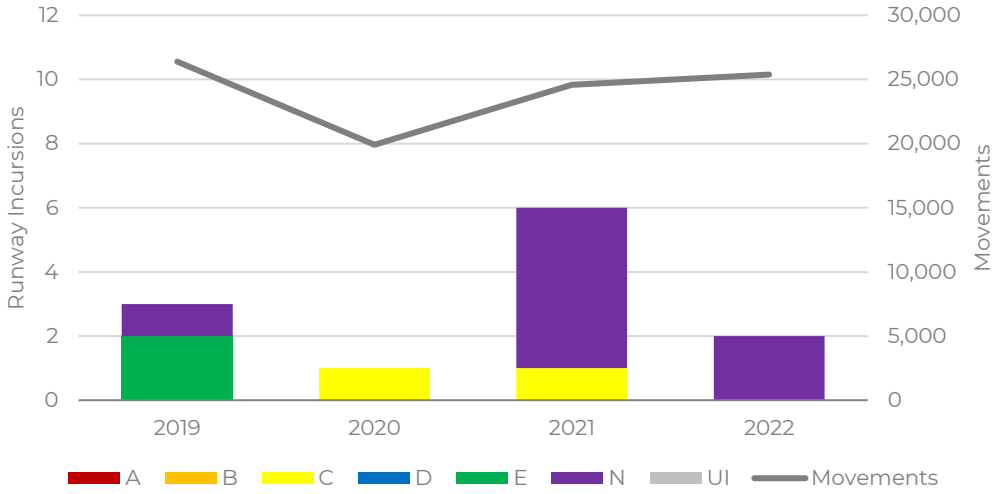


Figure 2-4 : Runway Incursions per Severity Category at Ostend-Bruges Airport by Year

Figure 2-5 puts the number of RIs in perspective by normalizing this value with the number of movements during the year. The rate of RIs has seen a sharp decrease since 2021 and has dropped to below 2019 levels. There was no involvement of ATM in any RI in 2022.

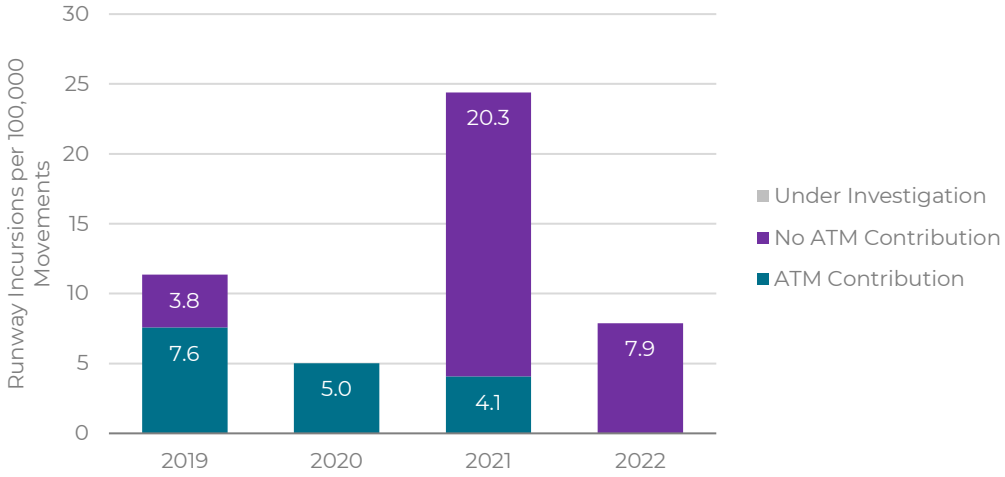


Figure 2-5: Runway Incursions by ATM Contribution at Ostend-Bruges Airport from 2019 to 2022

Other RWY/TWY Events and Wildlife Reports

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 2-6 gives a summary of those incidents in Ostend–Bruges International Airport per year.

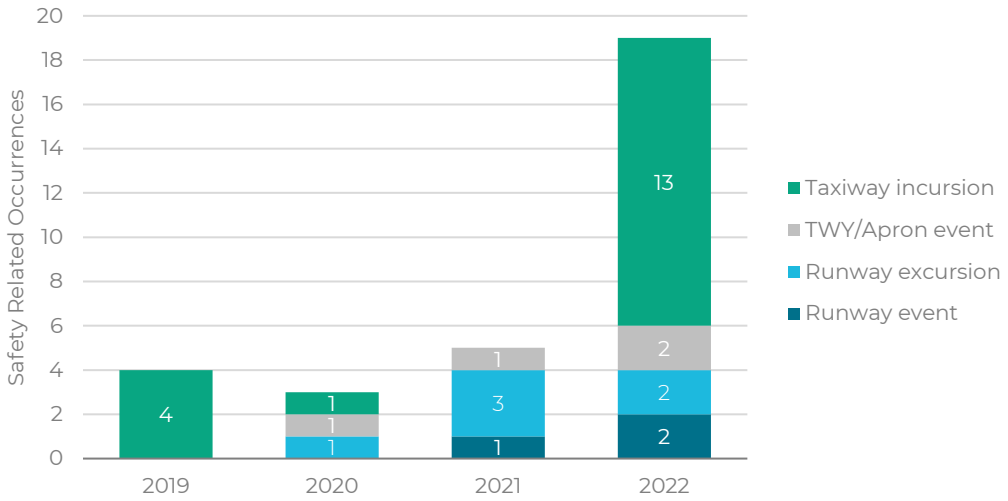


Figure 2-6 Runway/Taxiway Safety Related Occurrences at Ostend-Bruges Airport from 2019 to 2022

There was an anomalous increase in taxiway incursions. 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. One of the taxiway events involved a pilot losing control of their plane on the taxiway, resulting in damage of the plane, but the pilot was unharmed. Local air traffic controllers explained that the increase in taxiway incursions might be due to an improvement of the reporting culture within skeyes, as these incidents would previously be left without a report.

One runway event had ATM involvement. An ATCO, who did an on-the-job training, instructed an aircraft that it was cleared to land while the runway was not clear. The instructor intervened and ensured a safe resolution. This happened during Low Visibility Procedures. This event was classified with severity E – no safety impact.

skeyes also tracks wildlife incidents. Not only are collisions with local wildlife an impact on the environment, they also pose a danger to damage aircraft. Figure 2-7 shows the evolution of wildlife reports. The amount of wildlife reports has outnumbered 2019 levels.

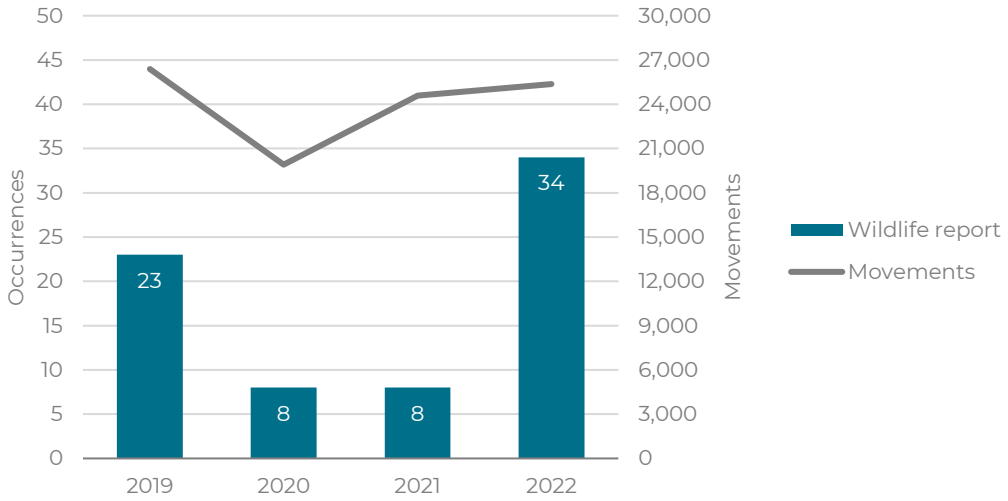


Figure 2-7: Evolution of wildlife reports at Ostend-Bruges Airport

Improvements And Recommendations

The Local Runway Safety Team (LRST), which 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 LRST meeting 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 LRST meeting.

The runway events mentioned above are examples of incidents, which were discussed during LRST 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 this pilots mistaking taxiway C1 for B1 and exiting the runway at the wrong location.

3. 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.

Assumptions:

- 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 and weight categories) is well represented by the fleet mix of the reference period for the calculations.
- 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 5NM for departures and 3NM for arrivals.
- 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 a study from Belgocontrol, performed in 2006, for aircraft landing at Ostend-Bruges airport.
- The average approach speed is 114 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.

For Ostend Airport, the declared capacity has been set as 90% of the Theoretical Capacity Throughput for each runway system. Here, it is noteworthy that the declared capacity only represents the capacity of IFR flights, because safe Wake Vortex Separation Distances between two flights have been assumed during the calculation. Therefore, it is also referred to as “Declared IFR Capacity”. Table 3-1displays this declared capacity per runway configuration at Ostend Airport.

Table 3-1: Declared IFR capacity

Runway Configuration	Runways		Declared Capacity [movements/hour]		
	DEP	ARR	Only Departures	Only Arrivals	Mixed Fleet
RWY 26	26	26	24	23	**34**
RWY 08	08	08	27	23	**33**

Besides the calculated theoretically possible capacity, the Effectively Used Capacity is an important performance indicator for the airport and for the air navigation service provider handling the arrivals and departures. Figure 3-1 shows the distribution of hourly movements per runway configuration for rolling hours with a step of one minute during the times the runway configuration was at least one hour in use in 2022. For this plot, helicopter movements

are not considered, but both VFR and IFR flights are[5]. The declared capacity is indicated as a horizontal line. The peak of the distribution shows the most likely number of movements you will have during the next hour when picking a random minute of the year during which the runway configuration is in use and will stay in use for this next hour.

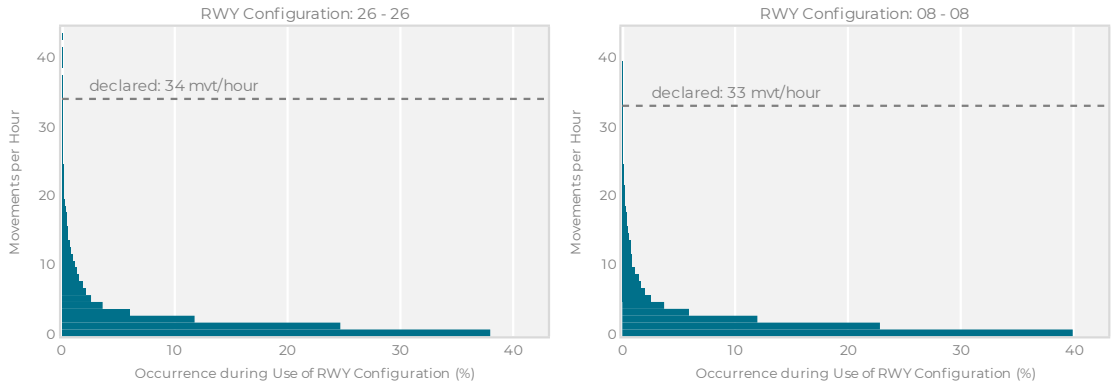


Figure 3-1: Distribution of the Hourly Movements for 2022 per Runway Configuration.

In total there were 12 days where the capacity was exceeded, eight were for runway configuration 26 and four were for configuration 08. The maximum flights in 1 hour was 44 and 39 for runway configurations 26 and 08, respectively. Every instance where the capacity was exceeded, there was at least 60% VFR traffic. An overview of all instances can be seen in Table 3-2.

Table 3-2: Days with Hours Exceeding the Capacity at EBOS in 2022 per Runway Configuration

Runway Configuration	Date (local time)	Extra Movements maximum number (*)	VFR Share minimum hourly percentage (*)	Departures Share minimum hourly percentage (*)	Departures Share maximum hourly percentage (*)
08 - 08	08/08/2022	6	94%	50%	54%
08 - 08	17/05/2022	4	83%	46%	47%
08 - 08	26/08/2022	2	91%	47%	50%
08 - 08	29/07/2022	5	94%	50%	54%
26 - 26	06/09/2022	2	86%	50%	50%
26 - 26	06/10/2022	3	67%	46%	54%
26 - 26	08/04/2022	8	60%	42%	51%
26 - 26	11/10/2022	1	97%	49%	51%
26 - 26	15/07/2022	3	97%	47%	51%
26 - 26	18/07/2022	10	80%	47%	52%
26 - 26	21/05/2022	2	69%	49%	56%
26 - 26	22/09/2022	4	92%	53%	56%

There are many periods of zero-movements, this is due to the fact that the airport does not have closing hours and low traffic numbers during large periods of the night.

[5] Only showing IFR flights would give a distorted view on the number of hourly movements – especially for airports with high VFR shares. For interpretation, however, it is to be considered that the declared capacity is only declared for IFR movements.

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)
- O – Other
- P – Special Event
- R – ATC Routeing
- S – ATC Staffing
- T – Equipment (ATC)
- V – Environmental Issues
- W – Weather
- NA – Not Specified

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 ATFM Arrival 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 (9.34% of target delay for all 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 2022

(1.08 minutes per flight all causes and 0.12 minutes per flight, 11.11%, for CRSTMP causes; 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 2022 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)[6]. Table 3-3 shows that no ATFM Arrival Delay has been recorded at Ostend–Bruges International Airport since 2019.

Table 3-3: Arrival Delay at Ostend-Bruges Airport per Year and Cause

	Minutes of ATFM Arrival Delay				# Arrivals
	CRSTMP	Weather	Other categories	**Total**	
2019	0	0	0	**0**	3,564
2020	0	0	0	**0**	2,639
2021	0	0	0	**0**	3,411
2022	0	0	0	**0**	3,954

ATFM Impact

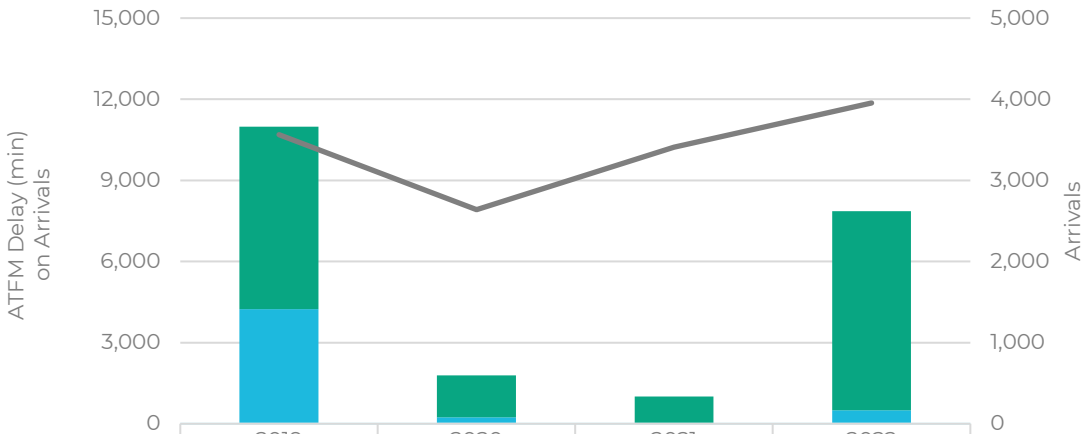
The impact of ATFM measures go beyond the restrictions placed by the airport of destination. In this section of the report, a view is given on the ATFM delay for all departing and arriving traffic in Ostend–Bruges International Airport. Regulations can be put in place at all ATC sectors on the flight 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 amount of regulations has once again increased.

This can also be seen in the ATFM delay figures for arriving and departing traffic. Figure 3-2 shows the total ATFM impact for all traffic arriving in Ostend–Bruges International Airport for the years 2019 to 2022. For arriving traffic, the delay increased from 1,008 minutes in 2021 to 7,864 minutes in 2022, impacting 473 flights. 504 minutes (6.4%) were due to regulations from skeyes and 7,360 from other ANSPs.

Figure 3-3 shows the total ATFM impact for all traffic departing from Ostend–Bruges International Airport for the years 2019 to 2022. The ATFM delay increased from 1,756 minutes in 2021 to 8,231 minutes in 2022, impacting 492 flights. 466 minutes (5.6%) of delay were due to regulations from skeyes and 7,765 from other ANSPs.

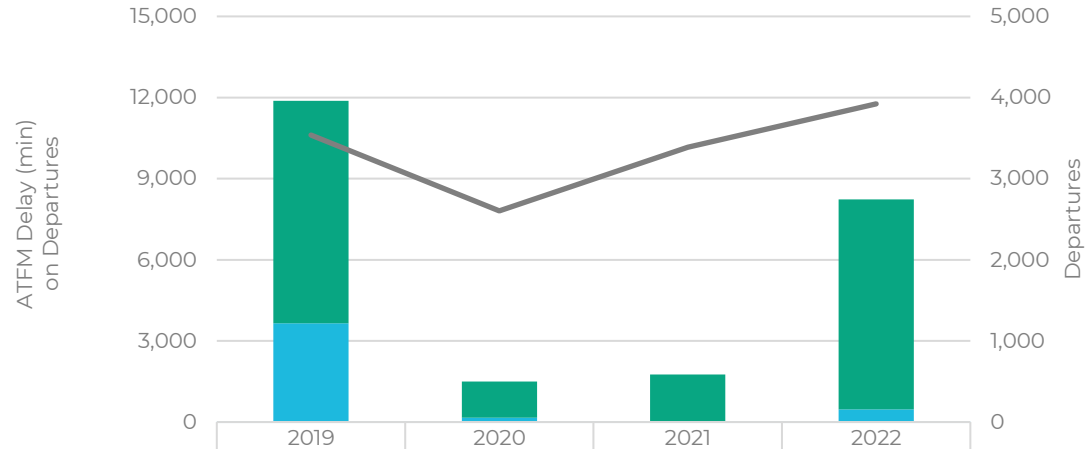
While traffic to Ostend-Bruges International Airport has almost fully recovered, the average delay is still lower than in 2019. The average delay for arriving flights was 3.08 minutes in 2019, and has decreased to 1.99 minutes/flight in 2022. For departing flights, the ATFM delay decreased from 3.36 minutes/flight to 2.10 minutes/flight from 2019 to 2022. This decrease holds true for skeyes' airports as a whole when comparing 2019 to 2022: the average delay for arriving flights decreased from 3.79 minutes/flight to 2.84 minutes/flight and for departing flights it deceased from 3.89 minutes/flight to 3.41 minutes/flight.

[6] 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



	2019	2020	2021	2022
Other ANSP	6,746	1,554	1,008	7,360
skeyes	4,243	237	0	504
IFR arrivals (with flight plan)	3,564	2,639	3,411	3,954

Figure 3-2: ATFM Delay on Arrivals Attributable to skeyes and other ANSPs



	2019	2020	2021	2022
Other ANSP	8,233	1,343	1,740	7,765
skeyes	3,650	155	16	466
IFR departures (with flight plan)	3,537	2,603	3,389	3,922

Figure 3-3: ATFM Delay on Departures Attributable to skeyes and other ANSPs

In total, in 2022, 473 arrivals and 492 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:

- 1-15 minutes of delay
- 15-30 minutes of delay
- 30-60 minutes of delay
- More than 60 minutes of delay

Figure 3-4 and Figure 3-5 show these categories respectively for arriving and departing traffic. 56% of the delayed arrivals and 57% of the delayed departures were delayed for a maximum of 15 minutes. 1% of the arriving flights in 2022 and 2% of the departing flights had a delay of more than one hour.

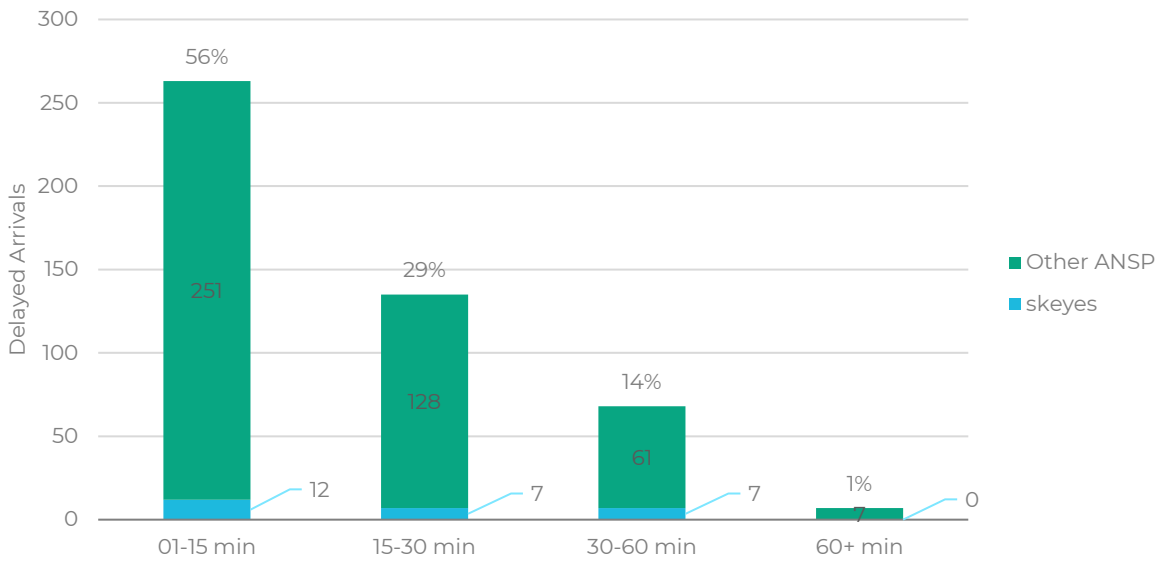


Figure 3-4: Delayed Arrivals per Delay Category

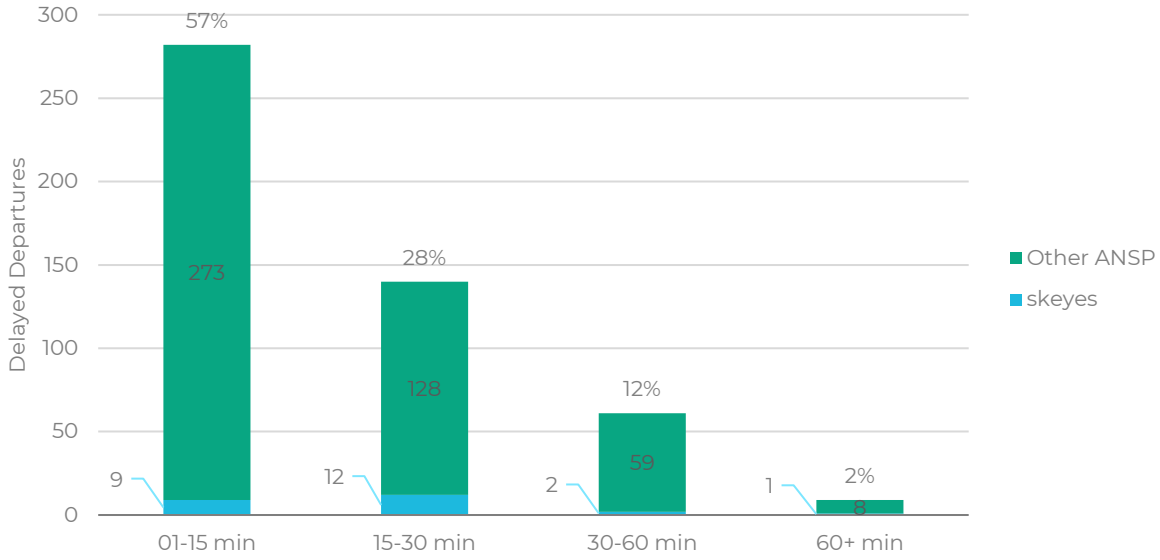
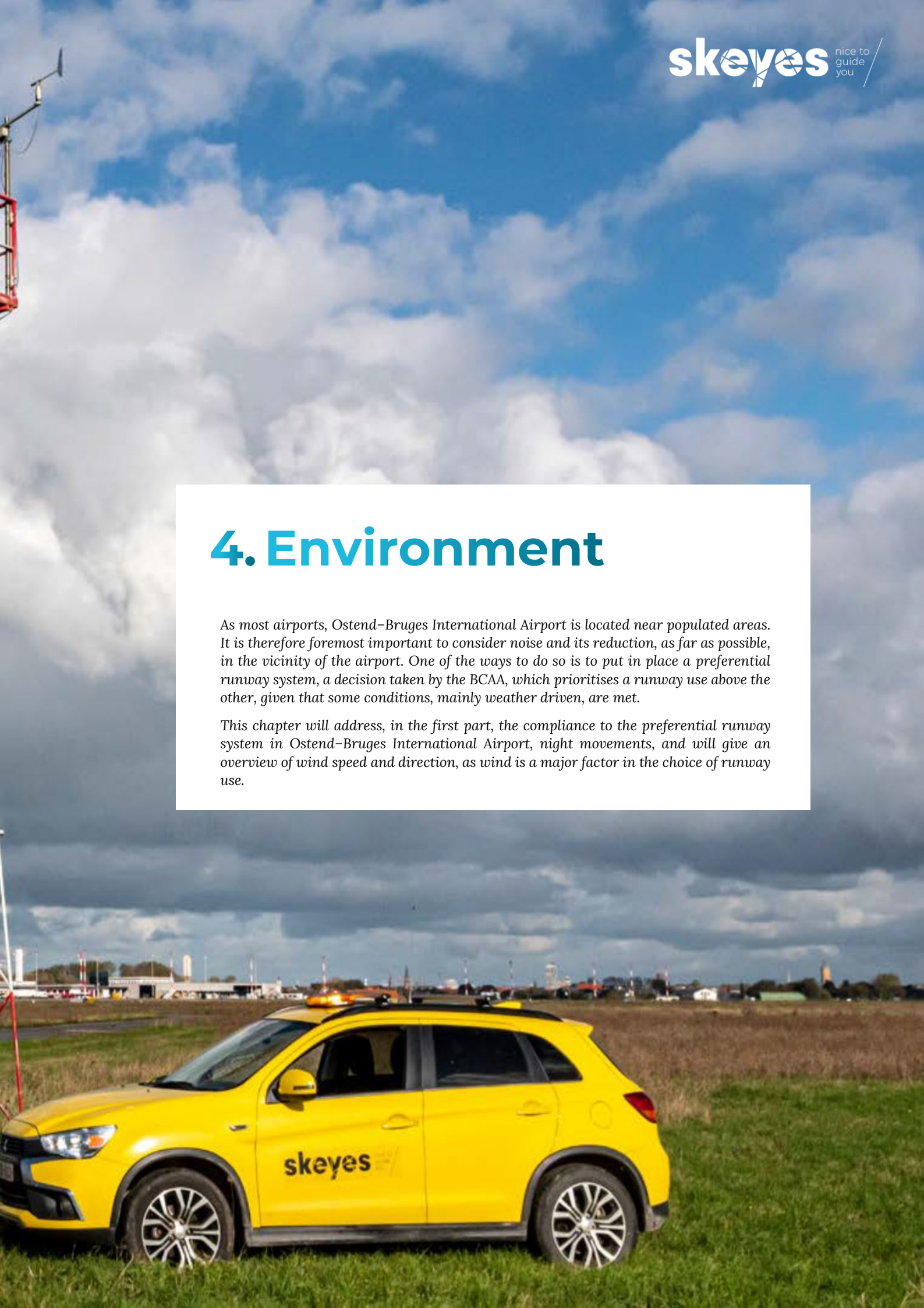


Figure 3-5: Delayed Departures per Delay Category



4. 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.

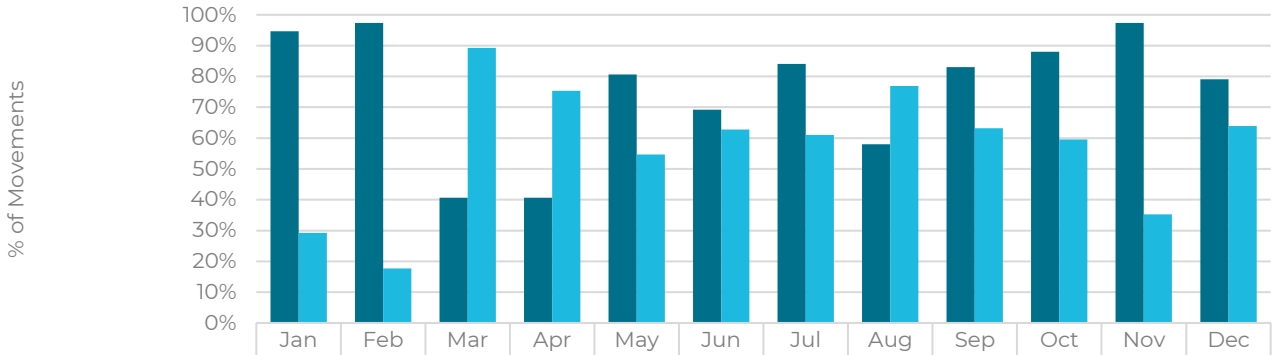
This chapter will address, in the first part, the compliance to the preferential runway system in Ostend–Bruges International Airport, night movements, and will give an overview of wind speed and direction, as wind is a major factor in the choice of runway use.

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 2022. Over the year, the PRS was followed by 75.5% for departures and 59.6% for arrivals. Combining departures and arrivals, the PRS was used for 68.1% of movements.

Strong winds in one direction generally mean that the PRS can only be active for either runway 26 or runway 08. March and April show a change of wind direction, resulting in more PRS usage for arrivals while lowered usage for departures. Strong westerly winds decreased the usage of the PRS for arrivals in January, February and October.



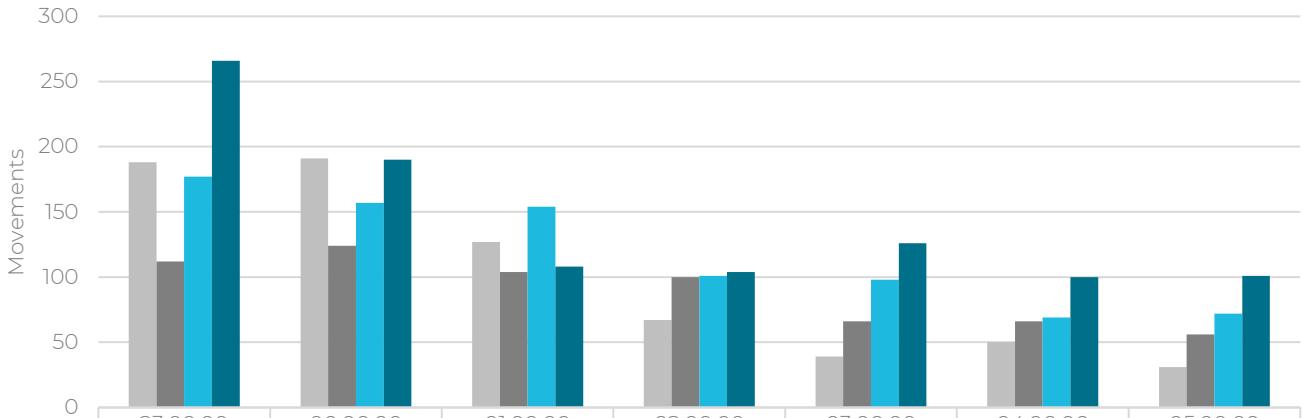
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
RWY 26 Departures	95%	97%	41%	41%	81%	69%	84%	58%	83%	88%	97%	79%
RWY 08 Arrivals	29%	18%	89%	75%	55%	63%	61%	77%	63%	60%	35%	64%

Figure 4-1: PRS compliance in 2022 for Ostend-Bruges Airport

Night movements

Figure 4-2 shows the number of night time (23:00 – 06:00) flights throughout the years. A clear increase can be seen throughout the years. Night traffic increased from 828 movements in 2021 to 996 movements in 2022. Most of this increase is due to low-cost segment recovering towards 2019 numbers. The number of movements in the low-cost segment increased from 139 night-time movements in 2021 to 290 night-time movements in 2022. The increase of movements in the low-cost segment during the night is concentrated from 23:00 to 01:00 and from 05:00 to 06:00. The cargo movements during the night increased from 449 in 2021 to 457 in 2022.

For reference, in 2019, there were 693 movements during the night at Ostend-Bruges International Airport. The low-cost segment accounted for 408 of those movements and there were 123 cargo flights.



	23:00:00	00:00:00	01:00:00	02:00:00	03:00:00	04:00:00	05:00:00
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

Figure 4-2: Yearly Night Time (23:00 - 6:00 LT) Traffic

Wind Patterns

Wind speed and direction per year can be seen in Figure 4-3. In 2022, the wind characteristics were similar to 2021 and 2020. The main wind direction was from South-West. Strong winds were slightly more frequent than in 2021, but not as frequent as 2020. Compared to the previous two years, there were slightly more south-easterly winds.

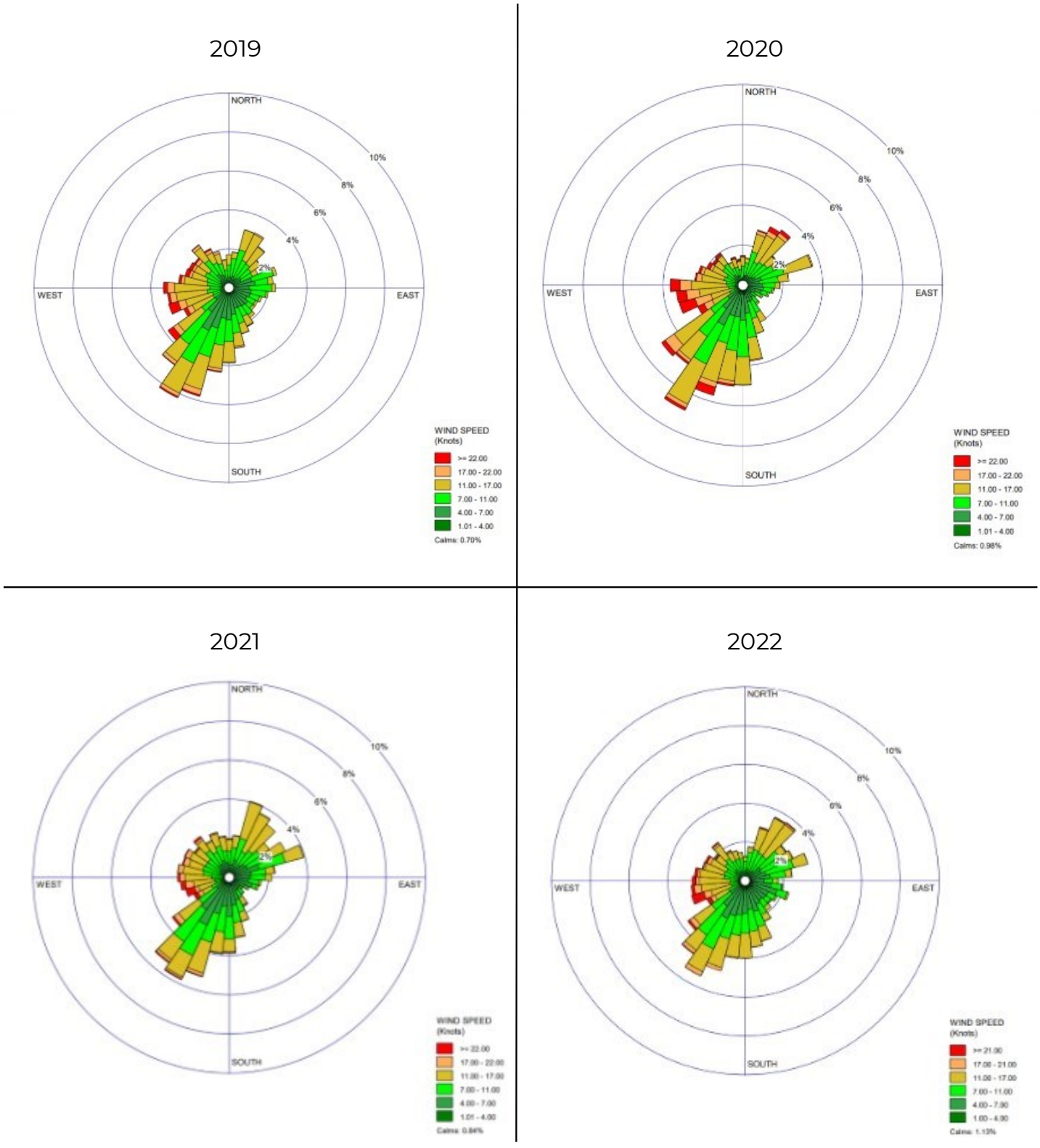


Figure 4-3: Yearly wind roses for Ostend-Bruges Airport from 2019 to 2022

Figure 4-4 shows the wind roses per month. In March, April, and August the wind direction was in favour of runway 08. This resulted in the high use of runway 08 in these months. South-westerly winds clearly prevail in the fall and winter months and this corresponds to the higher usage of runway 26.

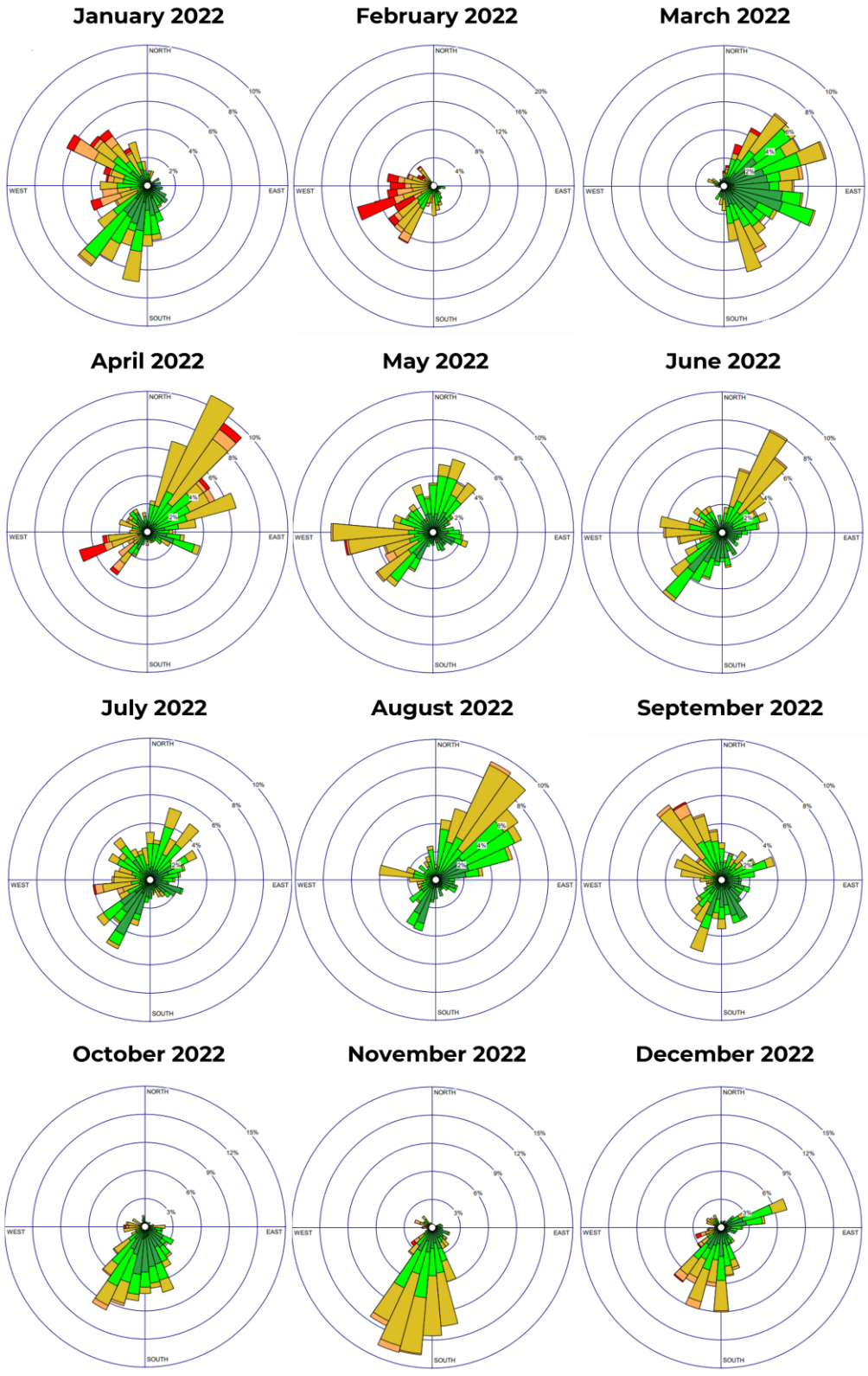


Figure 4-4: Wind Roses for Ostend–Bruges International Airport per Month in 2022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ANNEX

ANNEX: Fact sheet 2022

Traffic

Yearly evolution

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

Movements	2019	2020	2021	2022	2022 *vs* 2021	2022 *vs* 2019
Total	26,387	19,907	24,591	25,378	+3%	-4%
IFR	8,835	6,476	9,078	9,564	+5%	+8%
VFR	17,552	13,431	15,513	15,814	+2%	-10%

Quarterly comparison

Movements	2019	2020	2021	2022	2022 vs 2021	2022 vs 2019
Q1	5,057	4,758	5,535	5,044	-9%	-0%
Q2	7,353	3,924	7,122	6,977	-2%	-5%
Q3	7,207	7,184	7,626	7,774	+2%	+8%
Q4	6,770	4,041	4,308	5,583	+30%	-18%

Safety

Missed Approaches

- 24 missed approaches in 2022 (+26% vs. 2019)
- TOP 3 causes in 2022:
  1. H: Wx-visibility (9)
  2. Unstable approach (5)
  3. O: Other (4)

Safety Occurrences

- 2 runway incursions, none with ATM contribution
- Large increase in taxiway incursions, this increase can be the result of improvements in the reporting culture

Capacity & Punctuality

Capacity

Runway Configuration	Declared IFR Capacity	Maximum Movements/Hour in 2022
08 - 08	33 movements/hour	39 movements/hour
26 - 26	34 movements/hour	44 movements/hour

Capacity exceeded on 8 days for 26-26 and on 4 days for 08-08 only due to VFR traffic. IFR capacity never exceeded.

Punctuality:

Arrival delay:

- 0 minutes arrival delay
- CRSTMP delay: 0.00min/flight

ATFM impact:

- Arrivals: 7,864 minutes ATFM delay (504 due to skeyes' regulations)
- Departures 8,231 minutes ATFM delay (466 due to skeyes' regulations)

Environment

Runway use

- RWY26 – 60%
- RWY08 – 40%

PRS

- The PRS was followed by 68% of the movements overall.

Night Movements

- 20% increase in night movements, low-cost segment returning.

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