Operations Manual

København FIR

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1 INTRODUCTION

You are now reading the manual on Danish ATC operations. The previous version was published in 2000 by the (at that time) Danish VACC. Now we have updated the manual to give controllers a reference manual for providing ATC in Denmark (within EKDK – København FIR) as real as it gets within the frames of VATSIM.

In our definition of the VATSIM procedures we have on a number of points decided to deviate from realworld procedures. VATSIM is a network for simulating and its use is for hobby purposes. Not all real world procedures can nor should be simulated on VATSIM, since we are faced with different limitations in systems, skills and traffic levels for both pilots and ATC. For this reason some definitions have been modified and/or simplified compared to real-world definitions. One such example of a simplification is that we do not split the Area Control Sectors into Upper and Lower airspace. There is simply no need for this presently with the experienced traffic levels (2008).

In this document you'll find information on local procedures for both the ACC (Area Control Centre) position and the largest regional airports: Copenhagen Kastrup, Billund, Århus and Aalborg. Furthermore you'll find a short introduction to the positions used.
What you won't find in this document is basic information on how to provide ATC, such as use of program, global rules, how to perform ATC operations.

In this first version of the document not all procedures are described in the manual – yet. However with this document you should be able to find the information needed 95 % of the time you control in Danish airspace. Those last 5 % we are working on.

The document layout first takes you through the Danish airspace and the controller position. Afterwards the airports are described and last a walkthrough of the ATC positions covering the airports.

1.1 WHAT IS NEW?

With the new software the possibility of replicating realworld procedures become better and better. We have in the following taken this into account and there may therefore be some new terms in relation to the older software. In the understanding of the ATC structure it is therefore important to distinguish between some of the terms that were previously handled less rigorously. The main terms to understand are:

- Airspace — An area with lateral and vertical boundaries, eg. EKAH TMA.
- Sector — An airspace can be devided into one and more sectors in order to allow a flexibility in the allocation of the responsibility for providing Air Traffic Services for that particular part of the airspace.

- ATS position — A named position providing Air Traffic Services (Control or Information) within one or more sectors on one or more frequencies. On VATSIM we will typically mainly see Air Traffic Control (ATC) positions, and each have allocated one primary frequency which is the one seen by pilots
- ACC — Area Control Centre. Previously the term US Centre has been used. Throughout this document we have decided to refer to this with the term used in Denmark (and throughout Europe) namely ACC, which is actually also reflected in the Callsign "Copenhagen Control"

The document is written on the basis that all Sectors are staffed in Denmark. A good example is Approach and Departure sectors at Copenhagen. These are together split in 5 ATC positions. This will seldom be the case, and we will therefore also provide guidelines on how to combine the various sectors into fewer ATC positions.
An example of the open ATS positions on a typical Thursday night in Copenhagen FIR would be:

- EKCH_TWR — Covers all traffic on the ground and within Copenhagen Control Zone.
- EKCH_APP — Covers all sectors within Copenhagen Area.
- EKDK_CTR — Copenhagen Control, covering all Airspace within Copenhagen FIR except Copenhagen Area.

1.2 VERSIONS

The content of this manual will be updated from time to time. The table below summarizes which sections have been changed.

Table 1 – Versions

Date	Version	Section changed	Changed
July 2008	1.0	All	New document

2 REFERENCES

The following pages and documents can be of help:

- The Danish AIP is available online through The Danish Civil Aviation Authority (Statens Luftfartsvæsen) and can be found at: www.slv.dk/dokumenter.
- The Training manual for VACCSCA can be viewed at www.vaccsca.org (Training).
- ATC resources for online controlling in Denmark can be found at www.vaccsca.org (ATC section).
- The VATEUD Training Department is a goldmine of documents on the art of virtual controlling.
- The VRC program, documentation and forum can be found at www.metacraft.com/vrc.
- Euroscope program, documentation and forum can be found at www.euroscope.hu.

3 AOR AND AIRSPACE

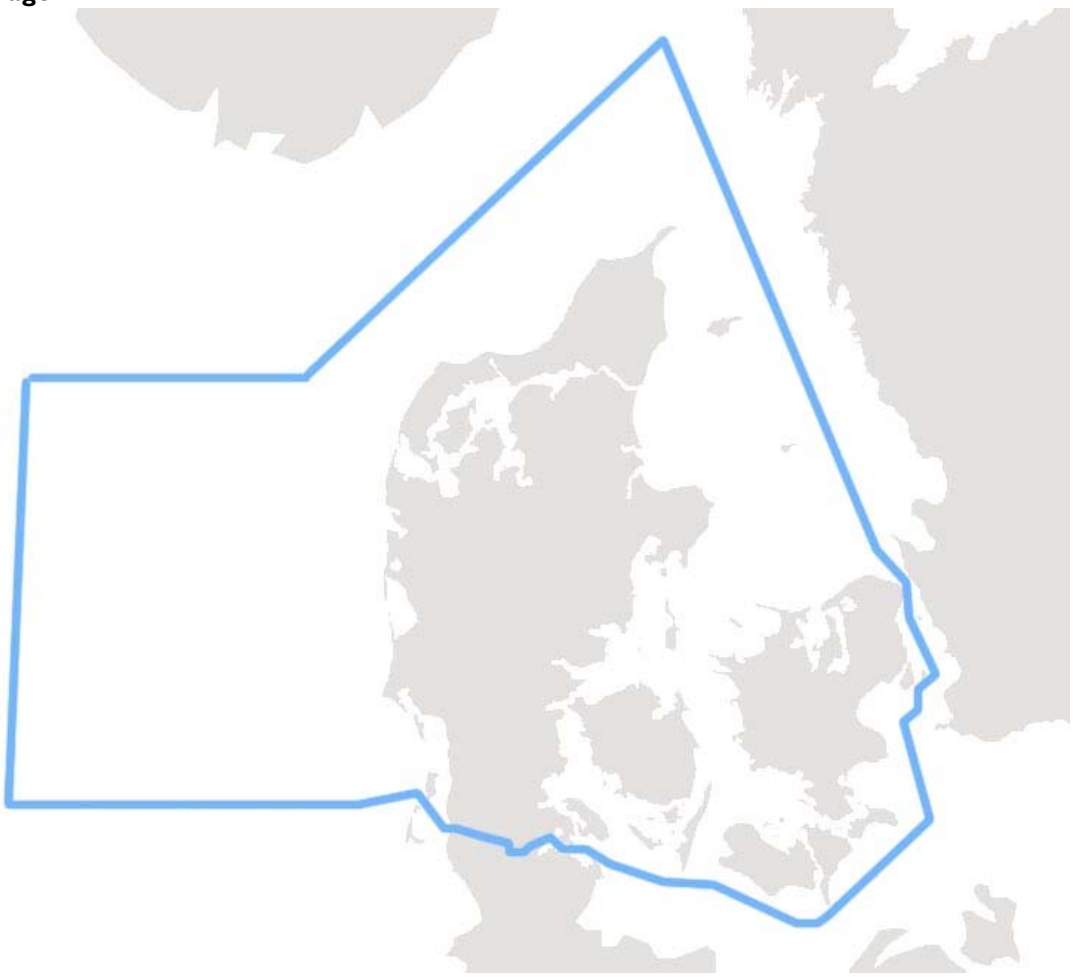
3.1 COPENHAGEN FIR AND THE AOR

First an introduction to the Danish Airspace. The major airports will be covered in separate sections.

3.1.1.1 COPENHAGEN FIR AND COPENHAGEN AOR

Denmark contains one FIR (Flight Information Region): Copenhagen FIR. The FIR represents the division of airspace between the different countries. The FIR is shown on Figure 1.

Figure 1 - Copenhagen FIR



In order to optimize the ATS within Copenhagen and the surrounding FIRs the responsibility for providing ATS has in some areas been shifted between eg. Copenhagen, Scottish and Sweden FIRs. The area for which DK controllers provide ATS is the Copenhagen Area of Responsibility (AOR). In the following the differences between the Copenhagen FIR and Copenhagen AOR is listed:

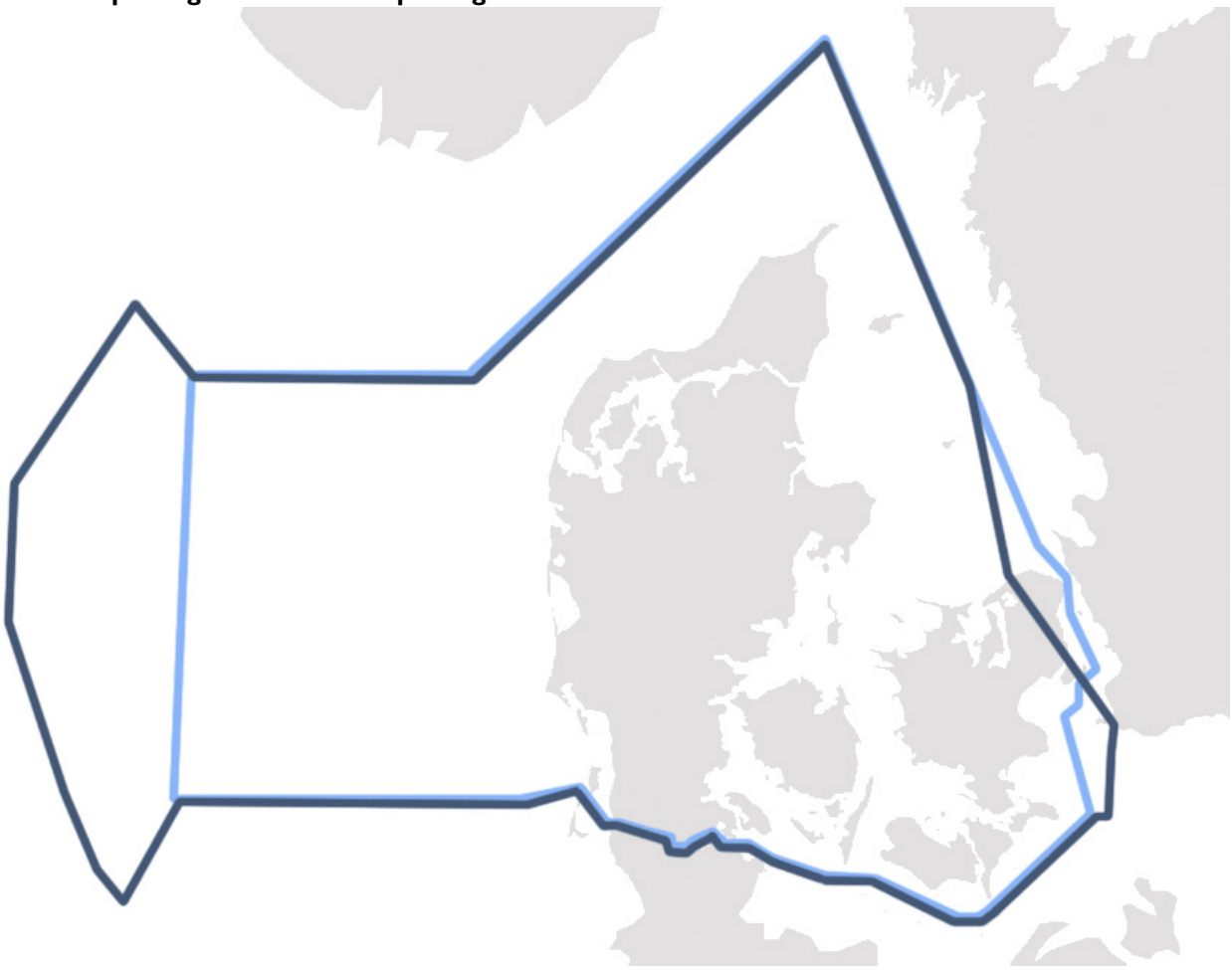
- Due to Kastrup Airport being very close to Sweden, a small strip of Swedish airspace is delegated to Danish controllers up to FL195.

- To insure a minimum of controller changes a part of high Danish airspace is delegated to Sweden (Departure from EKCH on NORA SID)
- Due to better radar coverage in the North Sea an area is delegated from Scottish to Copenhagen Control

As ATC on Copenhagen Control (EKDK_CTR) you control the area within Copenhagen AOR, including areas delegated to Copenhagen Control and vice versa.

The Danish area of responsibility (AOR) can be seen on the map below (Marked in dark blue) together with the Copenhagen FIR (still in light blue) to show the difference. Thin dark blue lines indicate borders between neighbouring AORs.

Figure 2 - Copenhagen AOR and Copenhagen FIR



3.1.2 VERTICAL LIMITS

The airspace within Copenhagen AOR is divided vertically between boundaries as shown on Figure 3. Generally the area below 3500 feet and above FL660 it's uncontrolled airspace. Between 3500 and FL660 and around the major airports the airspace is controlled.
The exception is areas with controlled airports. Here the airspace is controlled all the way down to ground level.

Remember that the ACC position also covers controlled airports when no local ATC is online. There will be much more on vertical limits through out the document.

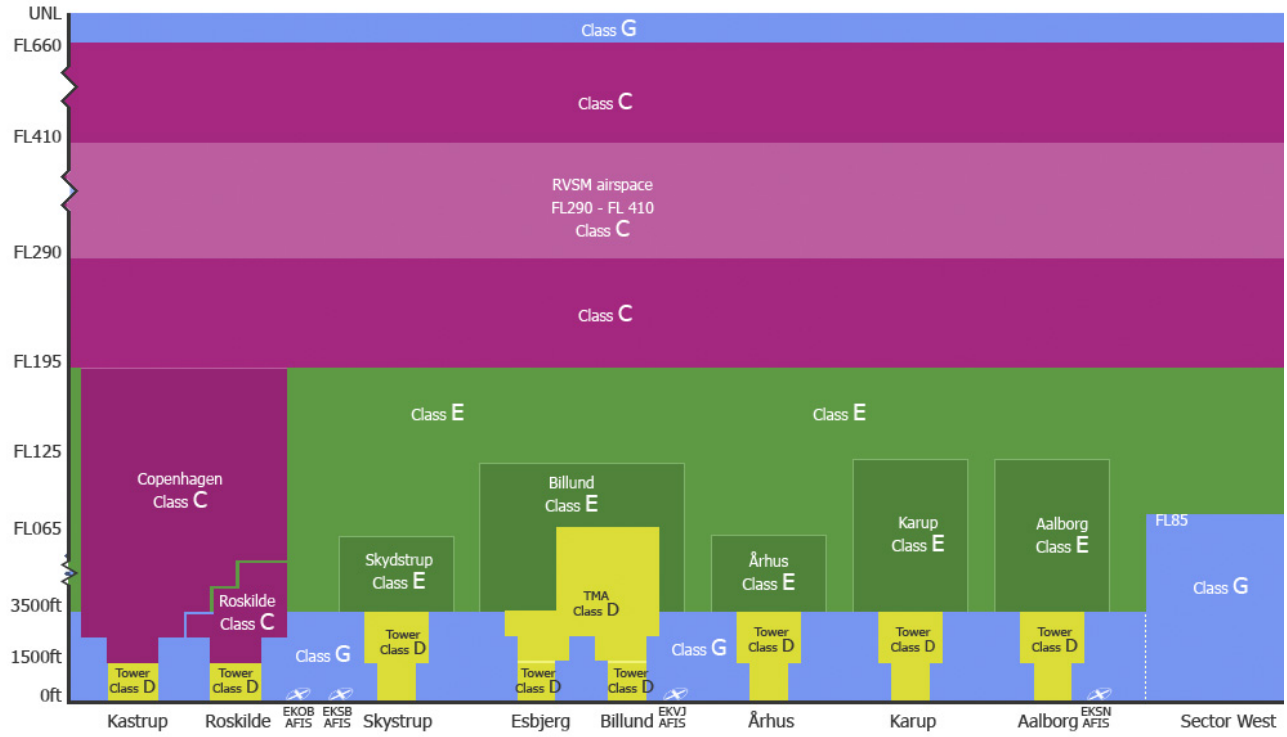
3.1.2.1 AIRSPACE CLASSES

Airspace classes define which rules apply to IFR and VFR aircrafts, including how to separate aircrafts and which service an ATC should provide. In Copenhagen AOR classes C, D, E and G are found.
Use this general rule of thumb:

- From GND level to 3500 ft is uncontrolled (Class G). Except if there is a controlled airport in the area.
- From 3500 ft to FL195 is Class E. Approach zone in the area might have a different classification.
- In the North Sea the border between class G and E is not 3500 ft but 8500 ft.
- FL195 – FL460 is Class C, and only for IFR traffic.
- Copenhagen Approach stretches up to FL195 and is also class C
- Regional airports approach zones stretches up to FL65/FL125 and is class E
- Airport control zones are Class D and normally extend from GND to 3500 ft.

See Figure 3 for a graphic view airspace classes within Copenhagen AOR.

Figure 3 - Copenhagen AOR and Copenhagen FIR Airspace Classes



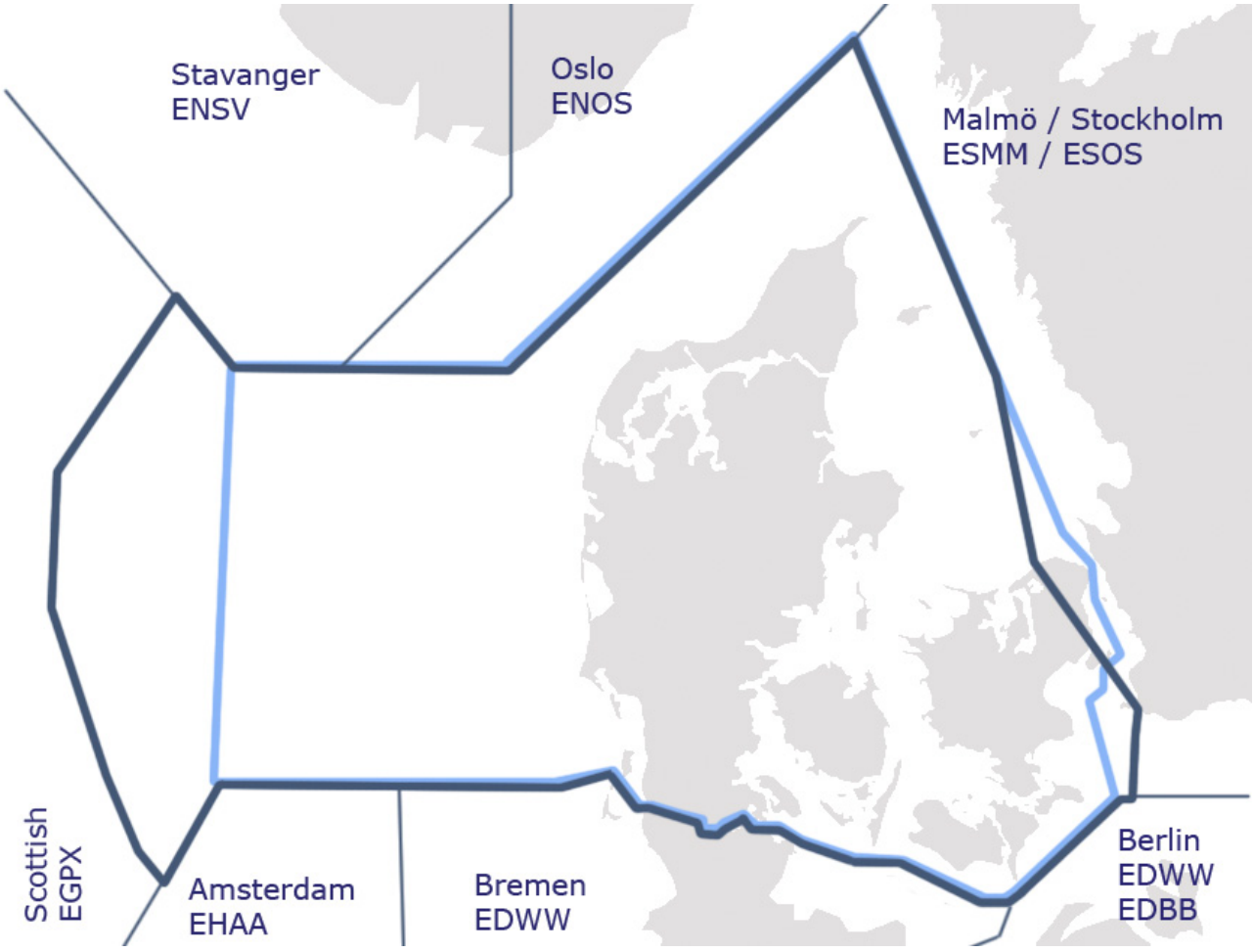
3.1.2.2 TRANSITION ALTITUDE AND TRANSITION LEVEL

In general the transition altitude (TA) in Denmark is 3,000 feet except for the Copenhagen Area, where the transition altitude is 5,000 feet. A table for converting the transition altitude to transition level can be found in the appendix K.

3.2 NEIGHBOURING AIRSPACE

Copenhagen FIR is obviously surrounded by our neighbouring countries and standard Handoff points exist where an aircraft under your control should be handed off to the adjacent controller. Check the Letter of agreement (LOA) for handoff points and altitudes. The lastest version of these can be found on the VACCSCA website.

Figure 4 - Copenhagen AOR and neighbouring airspaces



The neighbours to Copenhagen AOR are (From the top clock-wise) listed below with a small note on the most important things to be aware off.
Check the LOA for agreements on handovers each way.
For each of the sourrounding AOR a list of sectors and adjacent default controllers are presented. In order to maintain an overview the list is limited to

the airspace adjacent to Copenhagen AOR, ACC positions, and significant Tower and Terminal positions.

In the following each FIR will be discussed and for each Sector the relevant data will be discussed. For each sector the following will be described:

- Sector The Airspace covered
- Callsign
- Freq
- Short ID (As used in Euroscope / VRC)
- Long ID The log on used by the Controller on VATSIM

Sectors that can be split will first be shown as unsplit with VATSIM-ID. Beneath the different splits are shown for that sector.

3.2.1.1 MALMÖ FIR (ESMM) / STOCKHOLM FIR (ESOS)

Table 2 - Malmö FIR and Sweden FIR

Sector	Callsign	Freq	ES ID	VRC	Long ID	Note
ESMM	Sweden Control	124.400	SMM	MM	ESMM_CTR	Primary frequency
ESMM-W	Sweden Control	124.400	SMM	MM	ESMM_M_CTR	
ESMM-E	Sweden Control	128.050	SME	ME	ESMM_E_CTR	
ESMM-K	Sweden Control	124.850	SMK	MK	ESMM_K_CTR	
ESMM-L	Sweden Control	134.970	SML	ML	ESMS_APP	
	Sturup Tower	118.800	SMU	MU	ESMS_TWR	
ESOS	Sweden Control	118.400	SSE	SE	ESOS_CTR	Primary frequency
ESOS-E	Sweden Control	118.400	SSE	SE	ESOS_E_CTR	
ESOS-W	Sweden Control	131.120	SWE	WE	ESOS_W_CTR	
ESOS-2	Sweden Control	133.700	SS2	S2	ESOS_2_CTR	
ESOS-8	Sweden Control	118.270	SS8	S8	ESOS_8_CTR	
ESGG	Göteborg Control	124.670	SGG	GG	ESGG_APP	Primary frequency
ESGG-E	Göteborg Control	124.670	SGG	GG	ESGG_E_APP	
ESGG-W	Göteborg Control	124.200	SGW	GW	ESGG_W_APP	
ESGG-F	Göteborg Arrival	120.120	SGF	GF	ESGG_F_APP	
	Landvetter Tower	118.600	SGT	GT	ESGG_TWR	

The Swedish sectors adjacent to Copenhagen AOR are controlled by Sweden Control, ESMM_CTR or ESMM_APP positions . However if these are not available the area is covered by ESOS_CTR. Close to the Swedish-Danish border you'll find two large Swedish airports: Göteborg Landvetter and Malmö Sturup. In order to ensure that aircraft destined for these two airports descent in time they should be in descent prior to leaving Copenhagen AOR. Likewise Swedish ATC must descend aircrafts into Copenhagen before handing over.

3.2.1.2 BERLIN FIR (EDBB)

Table 3 – Berlin FIR

Sector	Callsign	Freq	ES ID	VRC	Long ID	Note
EDWW_M	Bremen Radar	126.170	DBM	--	EDWW_M_CTR	Covers towards DK
EDWW_B	Bremen Radar	123.220	DBB	BC	EDWW_B_CTR	If EDWW_M is not online will cover up to DK
EDBB_I	Bremen Information	126.350	DBI	BI	EDBB_I_CTR	
EDBB	Bremen Radar	119.700	DBA	--	EDBB_APP	Primary frequency
EDBB_N	Bremen Radar	119.700	DBA	--	EDBB_N_APP	
EDBB_S	Bremen Radar	126.420	DB2	--	EDBB_S_APP	
EDBB_F	Berlin Director	121.120	DBF	--	EDBB_F_APP	
EDBB_DEP	Bremen Radar	120.620	DBD	--	EDBB_DEP	
-	Schonefeld Tower	120.020	DBT	--	EDDB_TWR	
-	Schonefeld Tower	127.870	DBTS	--	EDDB_TWR	
-	Tempelhof Tower	119.570	DIT	--	EDDI_TWR	
-	Tegel Tower	124.520	DTT	--	EDDT_TWR	

Berlin only shares 40 nm border with Denmark. There isn't any large airports close to the border that normally affects the ATC. Transit traffic normally continues to Sweden. However inbounds to Kastrup arrive inbound CDA, making some rather tight turns at the VOR.
In real life the area is controlled from the same location as Bremen Radar, hence the callsign is Bremen Radar even though it controls the area formerly known as Berlin.

3.2.1.3 BREMEN FIR (EDWW)

Table 4 – Bremen FIR

Sector	Callsign	Freq	ES ID	VRC	Long ID	Note
EDWW	Bremen Radar	123.920	DWC	DW	EDWW_CTR	Primary frequency
EDWW_E	Bremen Radar	125.020	DWE	--	EDWW_E_CTR	
EDWW_N	Bremen Radar	128.770	DWN	D2	EDWW_NECTR	
EDWW_I	Bremen Information	119.820	DWI	--	EDWW_I_CTR	
EDDH_APP	Hamburg Arrival	124.220	DHA	DH	EDDH_APP	
EDDH_F_APP	Hamburg Director	118.200	DHF	--	EDDH_F_APP	
-	Hamburg Tower	126.850	DHT	--	EDDH_TWR	

Bremen covers most parts of the Danish – German border. 50 nm south of the border you find Hamburg airport, so you might need to descend aircrafts to Hamburg. Have a look at the LOA on how to descend aircrafts before handing tem over.
Inbounds to Copenhagen must be descended to FL240B at GEKSA.

3.2.1.4 AMSTERDAM FIR (EHAA)

Table 5 – Amsterdam FIR

Sector	Callsign	Freq	ES ID	VRC	Long ID	Note
EHAA	Amsterdam Control	125.750	HHA	HA	EHAA_CTR	Primary frequency

In the western part of Danish Airspace Denmark share 50 nm borderline with Amsterdam Radar. Most traffic to/from EHAA is in transit. Be aware that the northern part of the EHAA area sometimes are used for military operations. Check with Dutchmil EHMC_CTR if online.

3.2.1.5 SCOTTISH FIR (EGPX)

Table 6 – Scottish FIR

Sector	Callsign	Freq	ES ID	VEC	Long ID	Note
EGPX	Scottish Control	129.220	GPX	GP	EGPX_CTR	Primary frequency
EGPX	Scottish Control	124.500		GP	EGPX_E_CTR	
	Scottish	136.300			SCO_CTR	No cover toward DK. No handoffs.

The Danish area of responsibility extends into Scottish FIR due to better radar coverage from Denmark. Different CTR-positions can cover parts of Scotland. Aircrafts from Denmark should be handed over to EGPX_CTR. The border of the AOR runs along: TIPAN, ABSIL, LARGA, SOTOL, ROPAL, SURAT, ITSUX, REKNA, ELSAN, ARTEX & NIVUN. Be aware that the Scottish Control's AOR extends down into EGTT (in the same way that Copenhagen AOR cover parts of Scottish FIR). This means that all traffic leaving Copenhagen AOR into the UK should be handed over to Scottish.
The SCO_CTR position covers an area over mainland Scotland, and does not share borders with EKDK.

3.2.1.6 LONDON NORTH FIR (EGTT_N)

Table 7 – London North FIR

Sector	Callsign	Freq	ES ID	VRC	Long ID	Note
EGTT_N	London Control	131.050	GTTN	--	EGTT_CTR	No handoffs

A small part of the English sector is controlled by Copenhagen Control (See AOR map above). However the part of English airspace that aligns along Copenhagen AOR is delegated to Scottish Control, such that EGTT and EKDK does not actually share borders. There are a lot of different CTR-positions within England. You should hand over to Scottish. If Scottish not is online the next controller in England will be EGTT_N, which control the northeastern part of England.

3.2.1.7 STAVANGER FIR (ENSV)

Table 8 – Stavanger FIR

Sector	Callsign	Freq	ES ID		Long ID	Note
ENSV	Stavanger Control	124.700	NSN	SV	ENSV_CTR	Primary frequency
ENSV_N	Stavanger Control	124.700	NSN	SV	ENSV_N_CTR	
ENSV_S	Stavanger Control	120.650	NSS	SS	ENSV_S_CTR	
ENSV_W	Stavanger Control	127.375	NSQ	SW	ENSV_W_CTR	
ENBR	Flesland Approach	119.600	NFA	FA	ENBR_APP	
ENBR	Flesland Director	118.850	NFD	FD	ENBR_F_APP	
-	Flesland Tower	119.100	NFT	FT		
ENZV	Sola Approach	119.600	NZA	ZA	ENZV__APP	
ENZV	Sola Approach	119.400	NZA	ZA	ENZV__APP	
-	Sola Tower	121.750	NZT	ZT		

The north-western area of Denmark AOR runs along Stavanger FIR. When Stavanger FIR isn't online it is sometimes covered by Oslo Control (ENOS). In this case coordinate with ENOS for coordination.

3.2.1.8 OSLO FIR (ENOS)

Table 9 – Oslo FIR

Sector	Callsign	Freq	ES ID	VRC	Long ID	Note
ENOS	Oslo Control	125.050	NNE	NO	ENOS_CTR	Primary frequency
ENOS-E	Oslo Control	125.050	NNE	NO	ENOS_E_CTR	
ENOS-N	Oslo Control	118.820	NNN	NN	ENOS_N_CTR	
ENOS-S	Oslo Control	118.870	NNS	NS	ENOS_S_CTR	
ENOS-W	Oslo Control	120.370	NNW	NW	ENOS_W_CTR	
ENGM	Oslo Approach	120.450	NOW	OA	ENGM_APP	Primary frequency
ENGM	Oslo Approach	120.450	NOW	OW	ENGM_W_APP	
ENGM	Oslo Approach	119.975	NOE	OE	ENGM_E_APP	
-	Gardemoen TWR-W	118.300	NOT	OT	ENGM_TWR	
-	Gardemoen TWR-E	120.100	NOE	--	ENGM_TWR	
ENCN	Kjevik Tower	119.950	NCN	CN	ENCN_APP	Primary frequency
-	Kjevik Tower	122.100	NCNT	CNT	ENCN_TWR	

Oslo Control covers most of the Norwegian-Danish border with a "corridor" running along the border. There are a few larger airports along the southern coast. Together with Oslo make sure to descend aircrafts if needed. Traffic between Oslo and Copenhagen fly through ESMM FIR.

3.2.1.9 EUROCONTROL (EUR_)

Table 10 – Eurocontrol

Sector	Callsign	Freq	ES ID	ES ID	Long ID	Note
EUR-E	Eurocontrol	135.300	EEE	EE	EURE_FSS	
EUR-M	Eurocontrol	135.450	EEM	EM	EURM_CTR	
EUR-N	Eurocontrol	133.450	EEN	EN	EURN_FSS	
EUR-S	Eurocontrol	135.550	EES	ES	EURS_FSS	
EUR-W	Eurocontrol	135.250	EEW	EW	EURW_FSS	

The Eurocontrol positions have been defined to cover a large number of FIRs at once. But it only handles traffic above FL245. Only hand over aircrafts to Eurocontrol if they are above FL245. If a national FIR is online (Like Bremen EDWW) this FIR has full control over its own airspace and aircrafts should be handed over to the local FIR and not Eurocontrol.

3.3 ENROUTE TRAFFIC

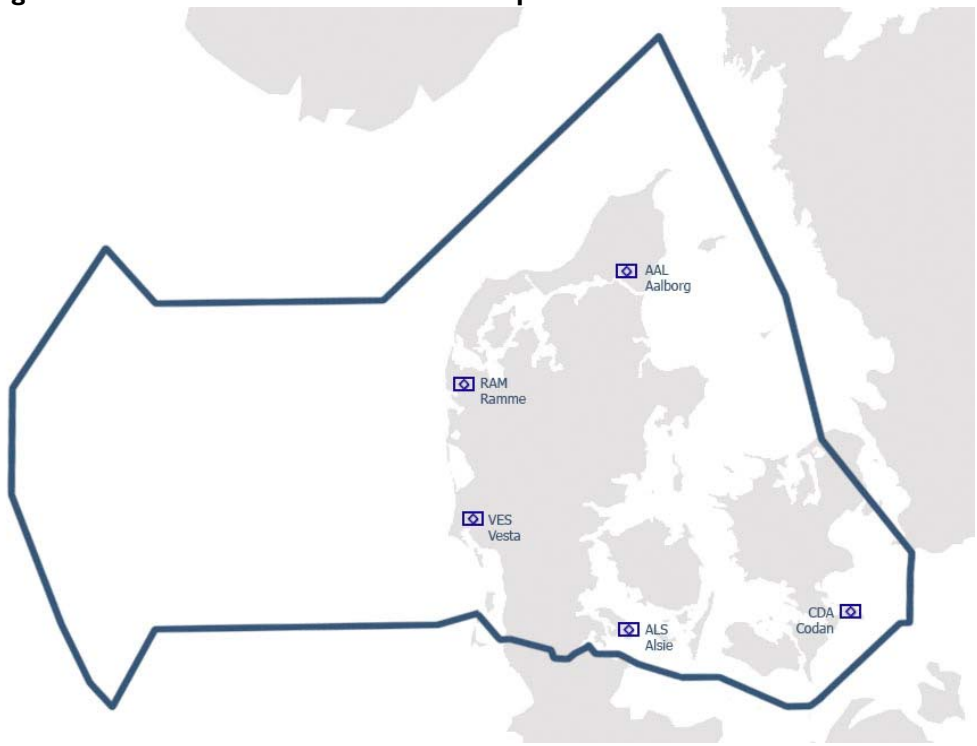
The source is from spring 2008. So if you are reading this on a later time you might have to check if the information still is up-to-date.

3.3.1 AIRWAYS

3.3.1.1 GENERAL ON AIRWAYS IN EKDK

Most airways through Copenhagen AOR are in some way connected to one of the Enroute VORs: Aalborg (AAL), Ramme (RAM), Vesta (VES), Alsie (ALS), and Codan (CDA). These can be seen on the map below.

Figure 5 – Often used VORs in Danish Airspace



Some airways are uni-directional and some are bi-directional. In the sectorfile you'll be able to see if the airway is uni-directional (and in which direction) by looking at the symbol next to the airway-designator.
The RSVM rules are in force in Denmark and Danish Airspace. This means that traffic only needs 1000 ft of separation up to FL410.

3.3.1.2 THE NEODD RULE, AND A TWIST

Most of the airways in Danish Airspace follow the NEODD rule where eastbound traffic travels on odd flightlevels and westbound traffic on even flightlevels. However no rule with out exeptions. The following airways doesn't follow the NEODD rule.

Table 11 – Non-NEODD airways

Route	From	To	Direction	Restriction
U/M726	NIKDA	CDA vor	One-way eastbound	Even FL
U/N850	MISBI	BAGOS	One-way westbound	Odd FL
UN851	MAKEL	GESKA	One-way eastbound	Even FL
U/N851	*GESKA*	*MOSIN*	*One-way eastbound*	*(Odd FL)*
U/P605	MEGAR	GESKA	One-way eastbound	Even FL
T51	KELOM	KOPEX	One-way eastbound	Even FL
U/T57	GESKA	CDA vor	One-way eastbound	Even FL
U/T59	*GESKA*	*KETAL*	*One-way westbound*	*(Even FL)*
U/T59	KETAL	KOR vor	One-way eastbound	Even FL
U/T299	*KOSEB*	*MONAK*	*One-way westbound*	*(Even FL)*
U/T299	MONAK	CDA vor	One-way eastbound	Even FL
U/T503	BISTA	GIMRU	One-way westbound	Odd FL
U/T551	BINRO	AAL vor	One-way eastbound	Even FL
UZ706	KOKOR	GESKA	One-way eastbound	Even FL
UZ711	BAMOR	GESKA	One-way eastbound	Even FL

Airways marked in Italic follow the NEODD rule, but a later part of the same route does not. Normally because the route makes a turn passing the 360 or 180 mark.
Pay special attention to T503/UT503. This airway is used by aircrafts departing Copenhagen via BISTA. Until GIMRU they should fly an odd flightlevel.

3.3.1.3 OTHER SPECIAL RULES REGARDING CERTAIN AIRWAYS

There are a few airways with some special conditions. These are listed below (only Upper airways shown).

Table 12 – Airways with special regulations

Route	From	To	Restriction
UL621	AAL vor	KULUD	Not available for traffic dest. Copenhagen Group (use UT54)
UL621	KULUD	NORTI	Not available for traffic dep. Copenhagen Group (use SORGA-UT501 or MIRGO-UT506)
UM611	LANGO	ALS vor	Unavailable for traffic dep. Copenhagen Group
UM726	NIKDA	CDA vor	Only available for traffic dest. EKCH
UM852	ALS	VADIN	not available for traffic dest. Gothenburg Group
UM852	ALS	ALASA	not available for traffic above FL245 dest. EDDH
UP615	ALS	ALASA	not available for traffic above FL245 dest. EDDH
UP730	TALSA	CDA vor	Not available for traffic dest. Copenhagen Group One-way eastbound
UP992	ATTUS	VES vor	Not available for traffic dest./dep. EKBI/EKEB when EK R38 is active
Q280	GESKA	LEGSA	Only available for traffic dest. EDBH/ETNL/ETNU
UT56	VES vor	ABINO	Not available for traffic dest. Copenhagen Group
UT59	KETAL	KOR vor	Only dest. Copenhagen Group except EKCH One-way eastbound - Even FL
UT299	KOSEP	CDA vor	Only available for traffic dest. EKCH via CDA
UT502	TOBIS	LANGO	Not available for traffic via ALS vor One-way westbound
UT502	LANGO	ALASA	Only available for traffic dep. CPH. Group One-way westbound
UT505	MIRGO	MIKSI	Not available for traffic via AAL One-way westbound
UZ700	GITER	CDA vor	Not available for traffic dest CPH Group One-way eastbound
UZ709	VES vor	LANUL	Not available for dep. EKBI, EKEB, EKVJ One-way westbound

Furthermore there are many airways that are one-way airways, so traffic only can fly in one direction on these. These are marked with an arrow in the sectorfile next to the name of the airway.

3.3.2 TRANSIT TRAFFIC FLOW

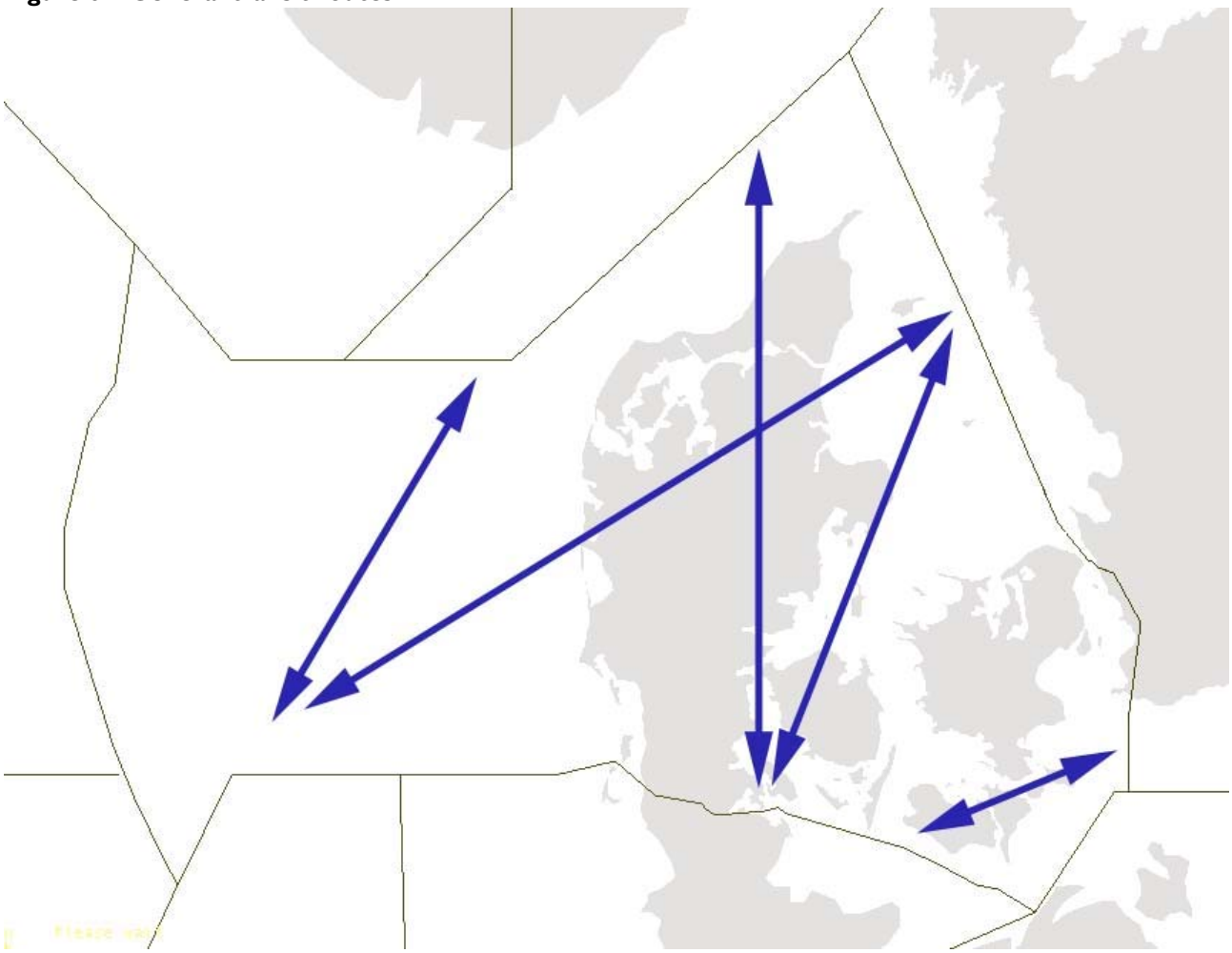
In this section a small note on the general flow of transit traffic to expect on VATSIM, and is also shown on the small map below. This guidelines was written in spring 2008. The airway layout might have changed since then. Always check the newest traffic flow and/or ask a senior controller.
The arrows show the main flow of transit traffic through Denmark. Furthermore you'll soon learn which entry/exit points are used most of the times. It is initially a good idea to turn the 5 main VORs on individually in your radarclient or keep a list of entry/exit points next to you.

Allthough there are many airways a few corridors are the ones mainly used by transit traffic.
These main-flow routes designate in 6 areas. Clockwise there are:

- The Northern corner: Traffic from Oslo to the rest of mainland Europe and vice versa.
- Via Göteborg: North-West European traffic to/from Stockholm and Finland.
- The south-eastern corner: Traffic passing over Sjælland between Bremen FIR and Sweden.

- Over ALSIE: near ALS VOR a lot of European traffic gather to/from the continent.
- The North Sea mostly have traffic that is on it's way to/from the UK sectors.
- The Oslo Corridor: Traffic between Oslo and the UK.

Figure 6 – General transit routes



3.3.2.1 DIRECT ROUTING

When possible we encourage ATC's to give pilots a direct routing as far as possible, however never any further than the Danish area of responsibility without a pre-agreement with the next ATC. Never give a direct routing that clears the aircrafts through foreign airspace (e.g. aircrafts from Sweden leaving the AOR at TIPAN) and finally be aware that a direct routing makes traffic leaving the airways. So be sure you still want the aircraft outside the corridor later on.

More important than shortcuts is that you can maintain an overview of the consequences of a direct routing.

3.3.3 MANDATORY REPORTING POINTS

Copenhagen FIR only uses "On Request" reporting points. No Mandatory reporting points are found any longer.

3.4 COPENHAGEN AREA CONTROL SECTORS

Goes without saying this is the most complex position in Copenhagen AOR, and if no other ATC is online you end up controlling the whole country and several airports. So of cause you need to know every part of Danish airspace to your fingertips.
Again and this cannot be said often enough, plan and co-ordinate, plan and co-ordinate and plan and co-ordinate the entire time with all relevant ATC on line to ensure the entire chain works and operates as one whole. Air Traffic Control is a team effort.

In connection with the increasingly advanced applications we have now decided to take the detailing of the Copenhagen Area airspace to a new level.
We have therefore defined all the sectors which are defined in the real world.
The airspace has been divided in three levels (Lower, Medium, Upper).
In real life the traffic levels are such that at peak hours each of these sectors are controlled by an individual controller. We have not reached this level of traffic on VATSIM, and at most expect 4 ACC controllers online.
In the following we will describe the 4 Positions and the Airspace they are responsible for.

3.4.1 ACC POSITIONS

Copenhagen Area Control is on VATSIM divided in to 4 controller positions, in accordance with the upper level sectors:

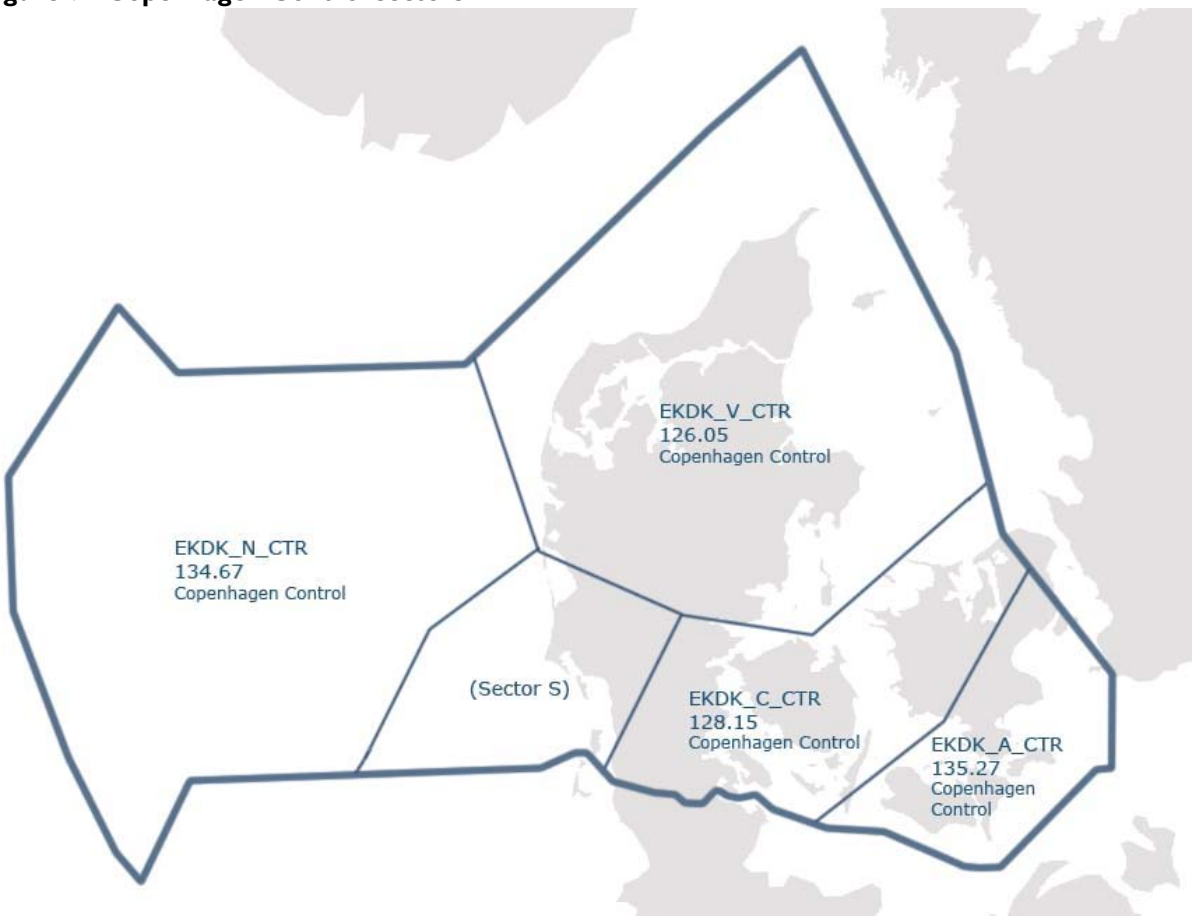
Table 13 – Copenhagen Control sectors

ACC position	Callsign	Freq	Short ID	Long ID	Note
EKDK_CTR	Copenhagen Control	135.270	DK	EKDK_CTR	Primary freq
EKDK_A_CTR	Copenhagen Control	135.270	DA	EKDK_A_CTR	
EKDK_C_CTR	Copenhagen Control	128.150	DC	EKDK_C_CTR	
EKDK_V_CTR	Copenhagen Control	126.050	DV	EKDK_V_CTR	
EKDK_N_CTR	Copenhagen Control	134.670	DN	EKDK_N_CTR	

These 4 ACC positions are related to the 4 upper airspace sectors. Each of the Lower and Medium level sectors has been attributed to one of these 4 ACC positions. This has been described in the next section, in the tables under "Assigned to ACC position". For each sector the 4 ACC positions are listed in priority, where a sector is attributed to the first position encountered online at any given time. If you are using Euroscope as ATC application the program handles the allocation of sectors to online Controllers automatically.

Under normal circumstances one ACC controller covers all of Danish airspace. But should the amount of traffic be high, the ACC airspace can be split.

Figure 7 - Copenhagen Control sectors



On a general note the ACC Sectors covers airspace from 3500ft and up to FL660.
However sector N only covers from FL85 and up to FL660.
Keep in mind that up to FL195 it's Class E airspace, where VFR isn't controlled.

Note that most of the approach sectors cover up to FL65, FL125 or FL195, and thereby "Cut out" some of the airspace of the Lower sectors.

3.4.2 LOWER LEVEL SECTORS (GND-FL245)

Figure 8 - Sectors between Ground and FL245

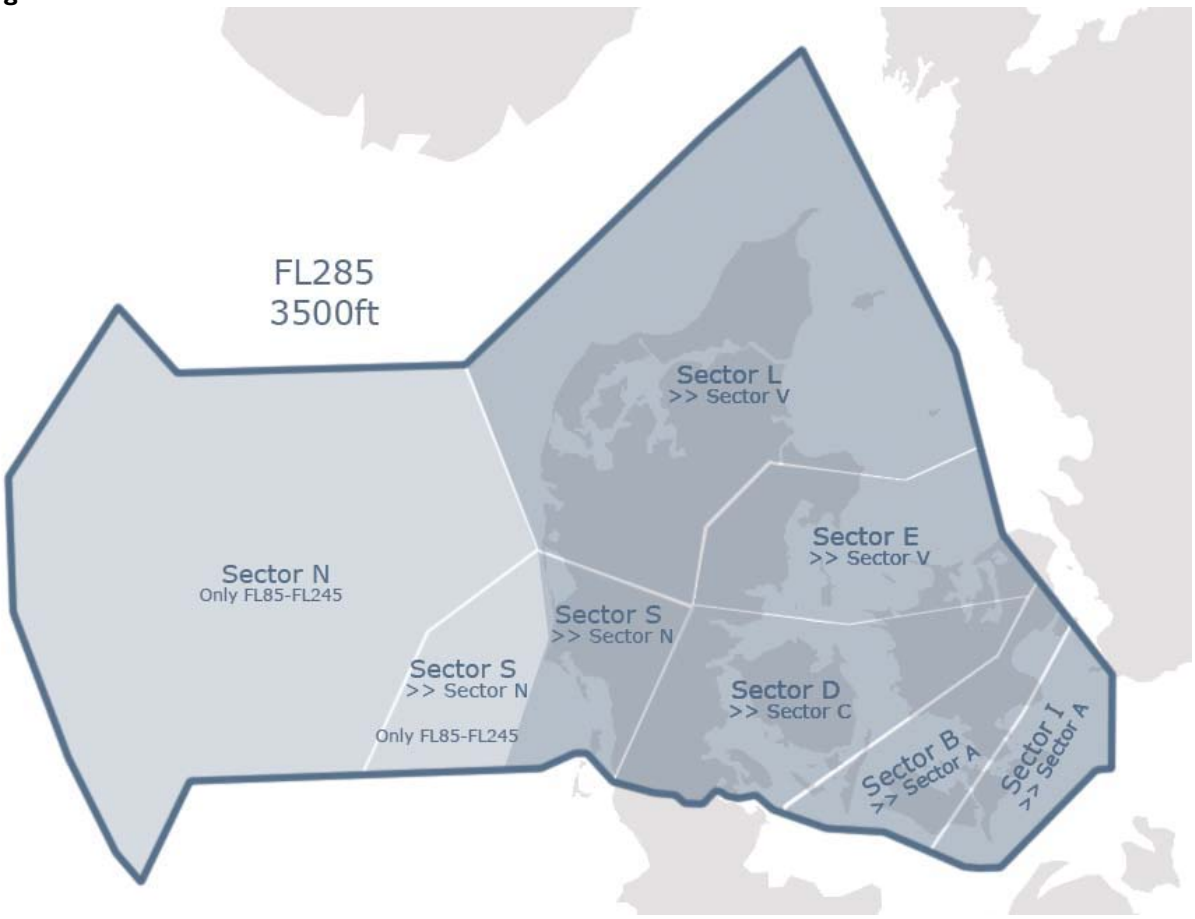


Table 14 – Sub sectors 3500ft – FL245

Sector	Assigned to ACC position	Boundary Low	Boundary Upper	Area
DK_B_L	DA, DC, DV, DN	3500	FL245	CDA
DK_D_L	DA, DC, DV, DN	3500	FL245	DOBEL DEPs from CH, LUGAS ARRs to CH
DK_E_L	DC, DV, DA, DN	3500	FL245	Djursland
DK_I_L	DA, DC, DV, DN	3500	FL245	BISTA,TOBIS, MAXEL DEPs from CH
DK_L_L	DV, DC, DN, DA	3500	FL245	North of Jutland
DK_N_L	DN, DV, DC, DA	8500	FL245	North Sea
DK_S_L1	DN, DC, DV, DA	3500	FL245	Esbjerg
DK_S_L2	DN, DC, DV, DA	8500	FL245	North Sea off of Esbjerg

3.4.3 MEDIUM LEVEL SECTORS (FL245-FL285)

Figure 9 - Sectors between FL245 and FL285

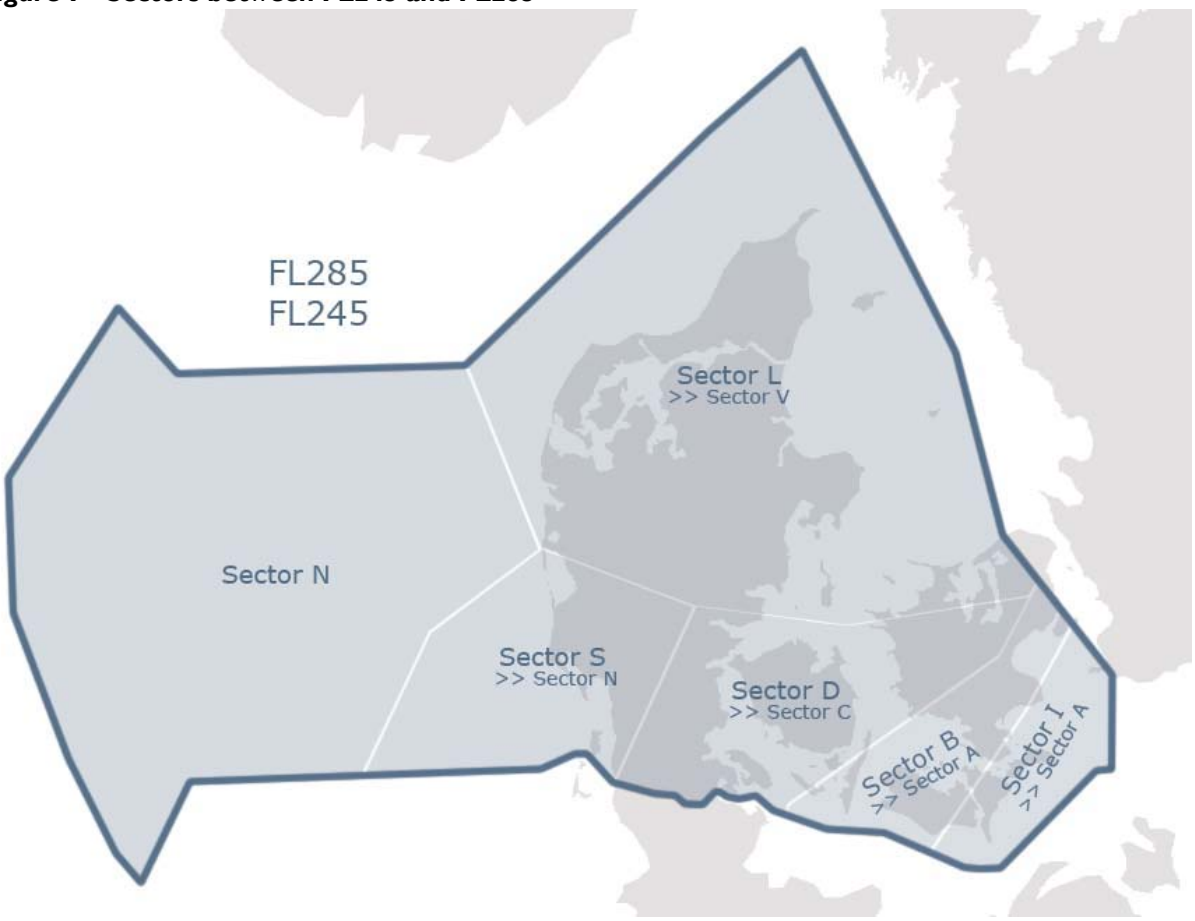


Table 15 – Sub sectors FL245 – FL285

Sector	Assigned to ACC position	Boundary Low	Boundary Upper	Area
DK_B_M	DA, DC, DV, DN	FL245	FL285	CDA
DK_D_M	DA, DA, DV, DN	FL245	FL285	DOBEL DEPs from CH, LUGAS ARRs to CH
DK_I_M	DA, DC, DV, DN	FL245	FL285	BISTA,TOBIS, MAXEL DEPs from CH
DK_L_M	DV, DC, DN, DA	FL245	FL285	North of Jutland
DK_N_M	DN, DC, DV, DA	FL245	FL285	North Sea
DK_S_M	DN, DC, DV, DA	FL245	FL285	North Sea / South-west of Jutland

3.4.4 UPPER LEVEL SECTORS (FL285-FL660)

Figure 10 - Sectors between FL285 and FL660

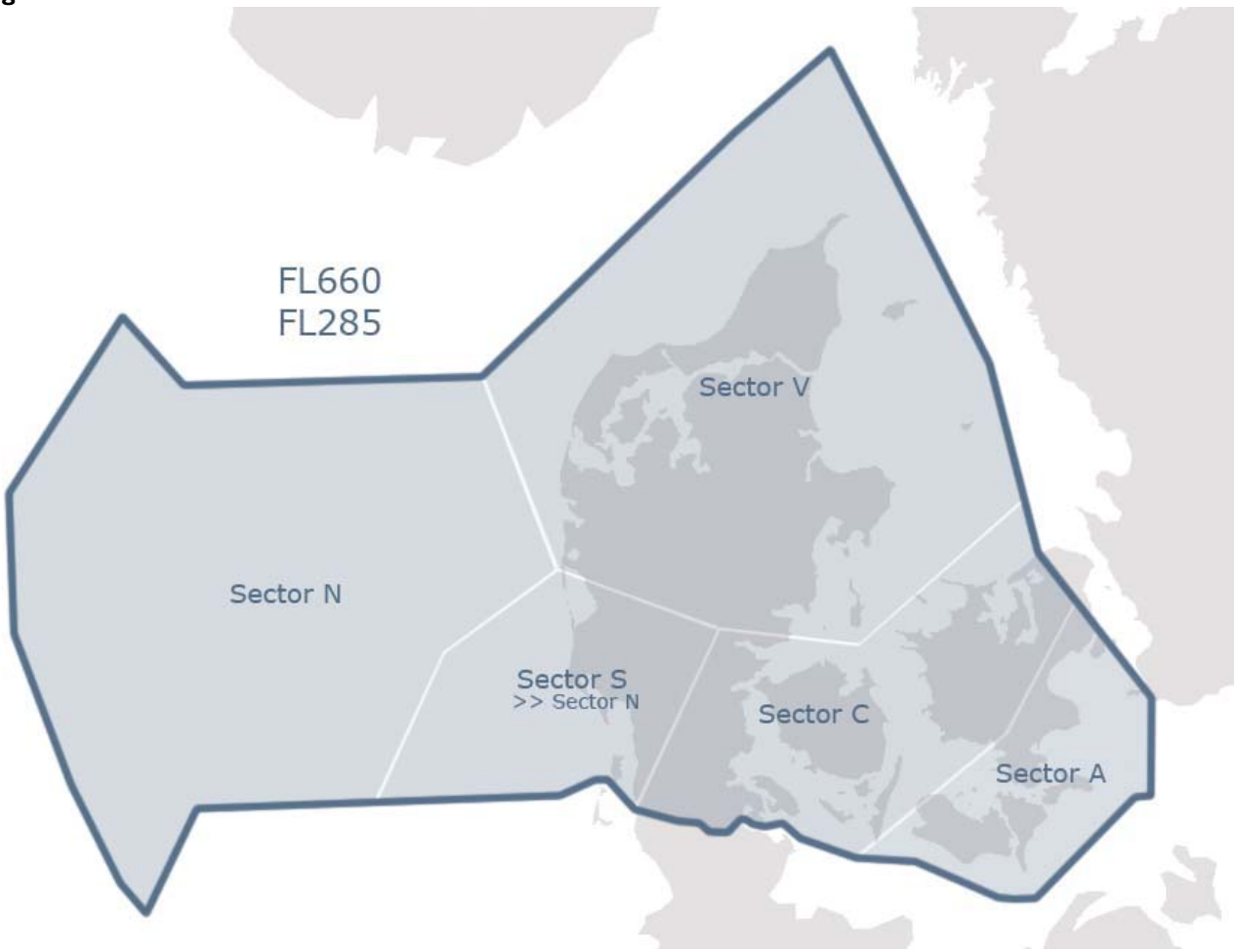


Table 16 – Sub sectors FL285 – FL660

Sector	Assigned to ACC position	Boundary Low	Boundary Upper	Area
DK_A_U	DA, DC, DV, DN	FL285	FL660	CDA and east of Sealand
DK_C_U	DC, DA, DV, DN	FL285	FL660	Fynen and North / West of Sealand
DK_N_U	DN, DV, DC, DA	FL285	FL660	North Sea
DK_S_U	DN, DC, DV, DA	FL285	FL660	North Sea / South-west of Jutland
DK_V_U	DV, DC, DN, DA	FL285	FL660	North of Jutland

3.4.5 4 ACC POSITIONS

The 4 following sections cover each of the ACC positions. Approach sectors have been described elsewhere. This is especially important to be aware off around the approach sector at Copenhagen.

3.4.5.1 SECTOR A

Sector A covers traffic inbound to Copenhagen via CDA and traffic in transit between Sweden and Germany

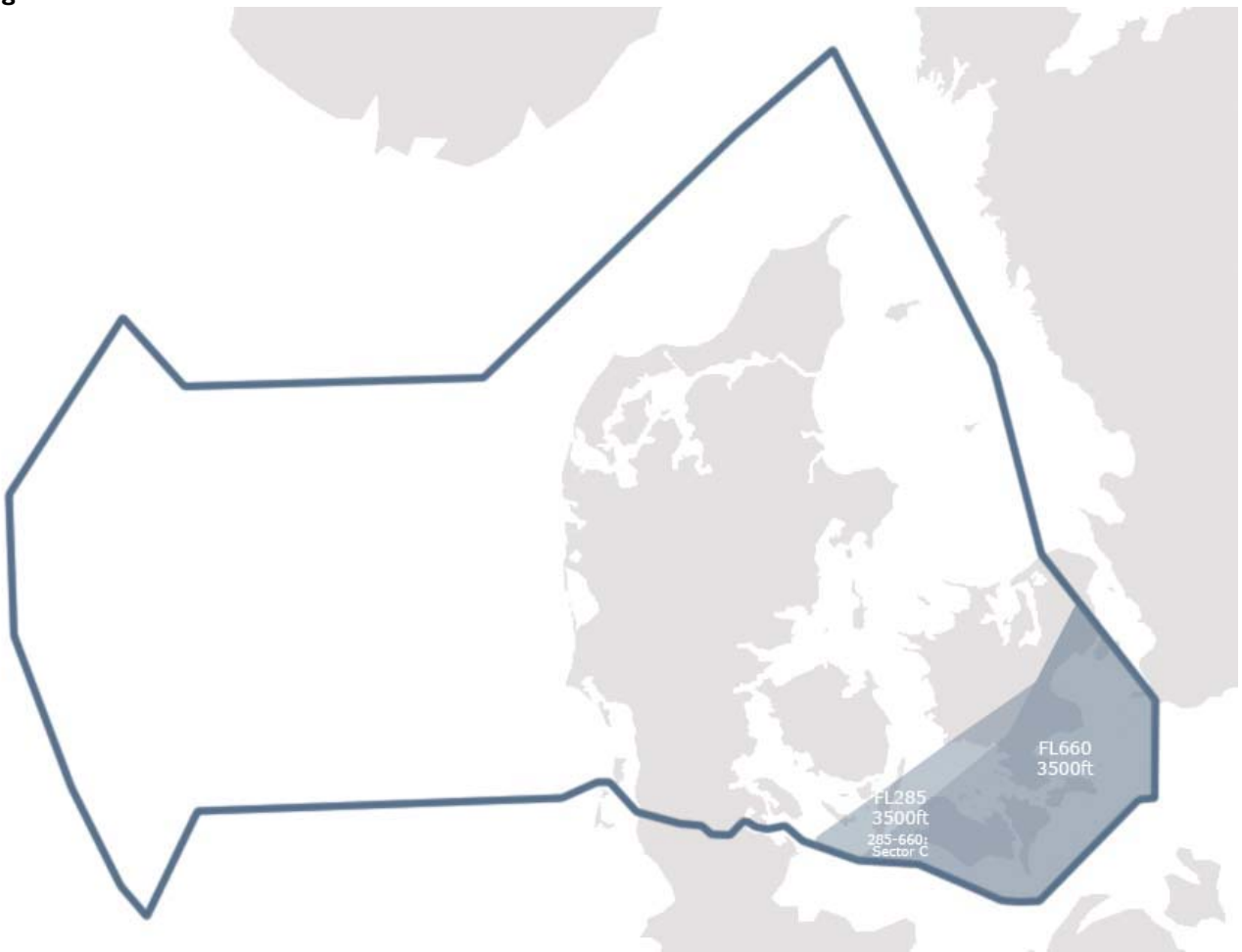
Table 17 – Frequencies in Sector A

ACC position	Callsign	Freq	Short ID	Long ID	Note
EKDK_CTR	Copenhagen Control	135.270	DK	EKDK_CTR	Primary freq
EKDK_A_CTR	Copenhagen Control	135.270	DA	EKDK_A_CTR	

Sector covers the south-eastern corner of the control area. Most of the area covered extend from 3500 ft up to FL660.
However a small part only extends from 3500 ft to FL285. Above FL285 the mentioned airspace is covered by Sector C.

In case there is no controller online in the Copenhagen Approach area (and below) this airspace is covered by EKDK Sector A.

Figure 11 – EKDK Sector A



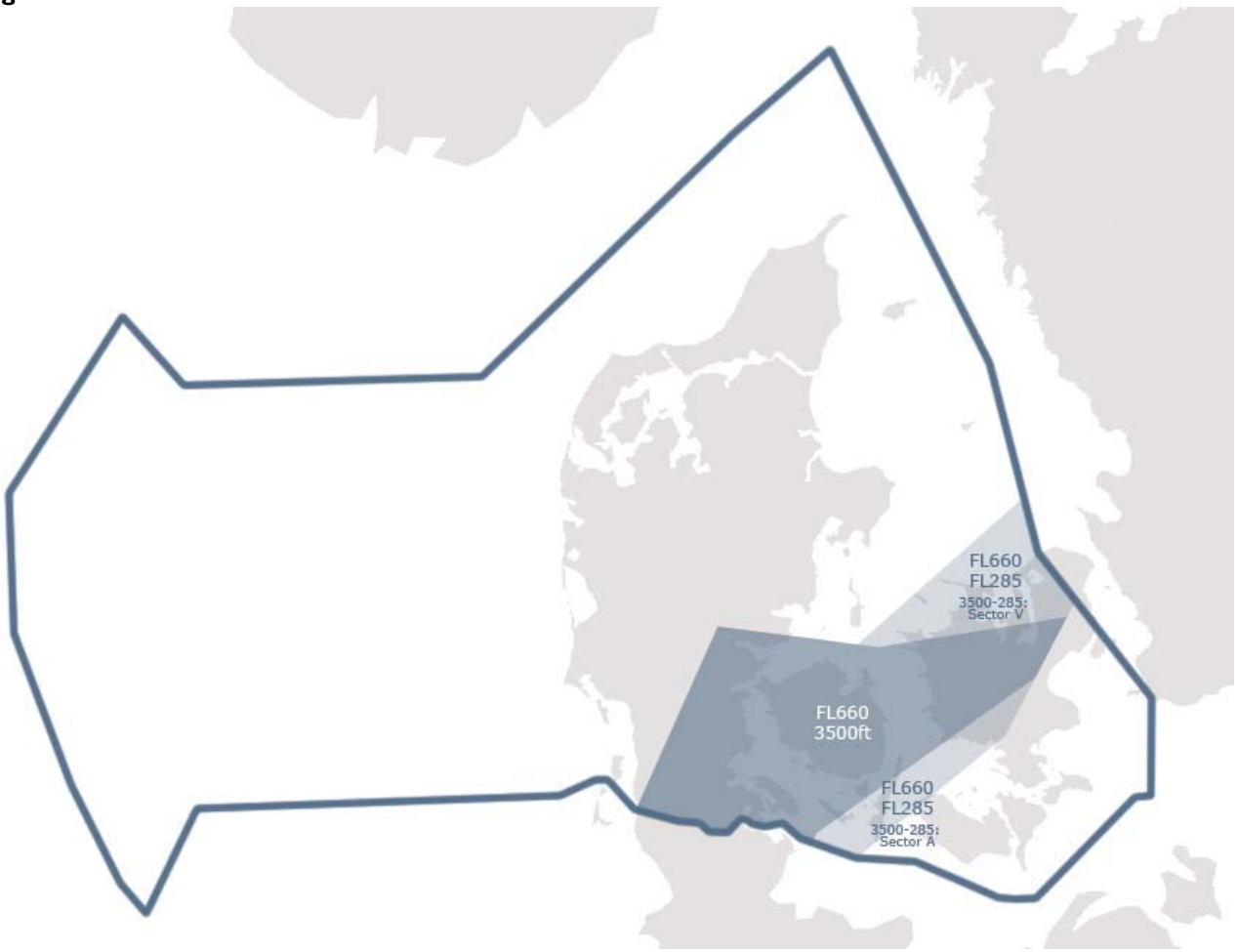
3.4.5.2 SECTOR C

Sector C covers two different kinds of traffic. Above FL285 it's mostly transit traffic between Germany and Sweden.
The lower parts mostly of the sector handles arrivals via KOR and departures from the Copenhagen area.

Table 18 – Frequencies in Sector C

ACC position	Callsign	Freq	Short ID	Long ID	Note
EKDK_CTR	Copenhagen Control	135.270	DK	EKDK_CTR	Primary freq
EKDK_C_CTR	Copenhagen Control	128.150	DC	EKDK_C_CTR	

Figure 12 – EKDK Sector C



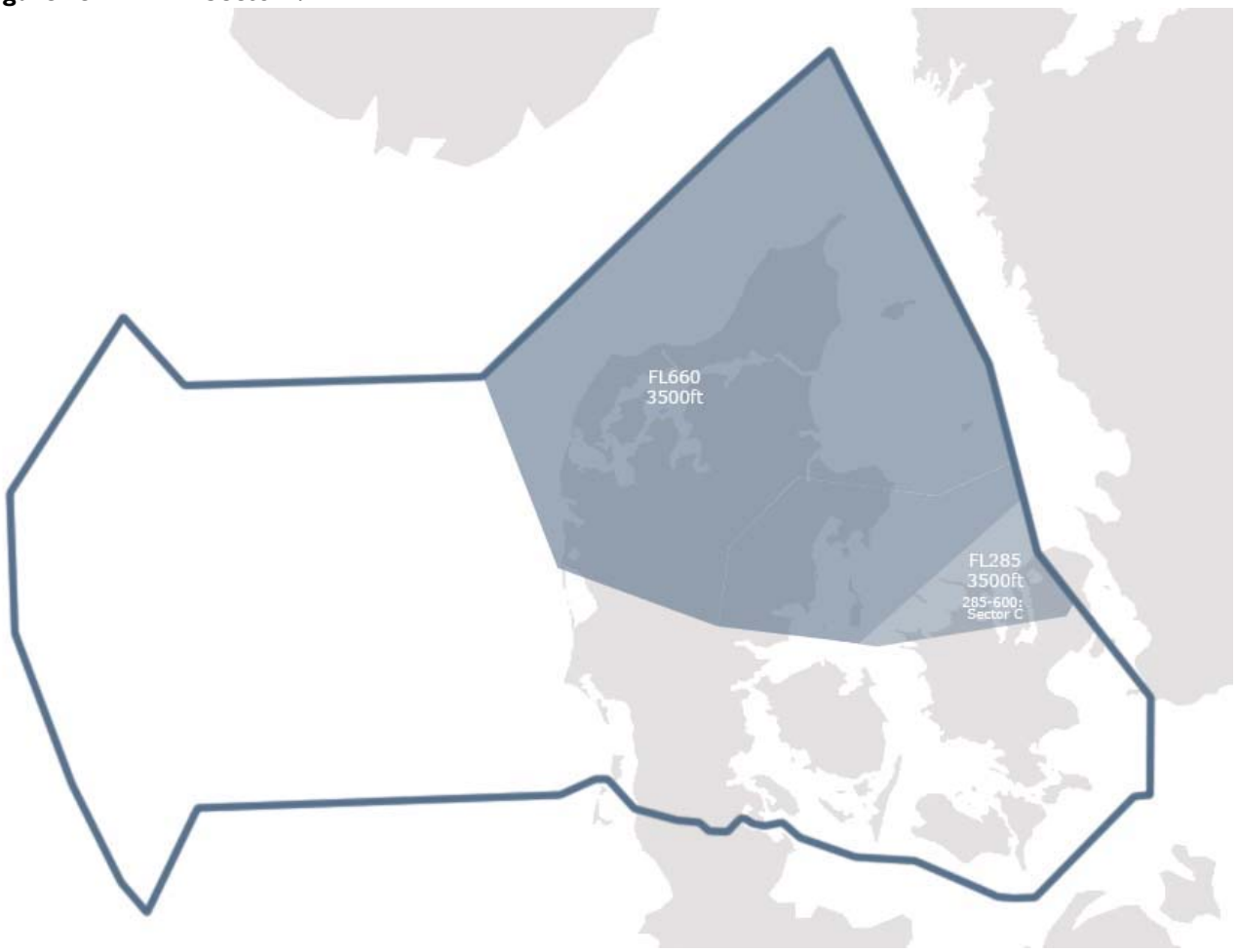
3.4.5.3 SECTOR V

Sector V covers most of Northern Jutland

Table 19 – Frequencies in Sector V

ACC position	Callsign	Freq	Short ID	Long ID	Note
EKDK_CTR	Copenhagen Control	135.270	DK	EKDK_CTR	Primary freq
EKDK_V_CTR	Copenhagen Control	126.050	DV	EKDK_V_CTR	

Figure 13 – EKDK Sector V



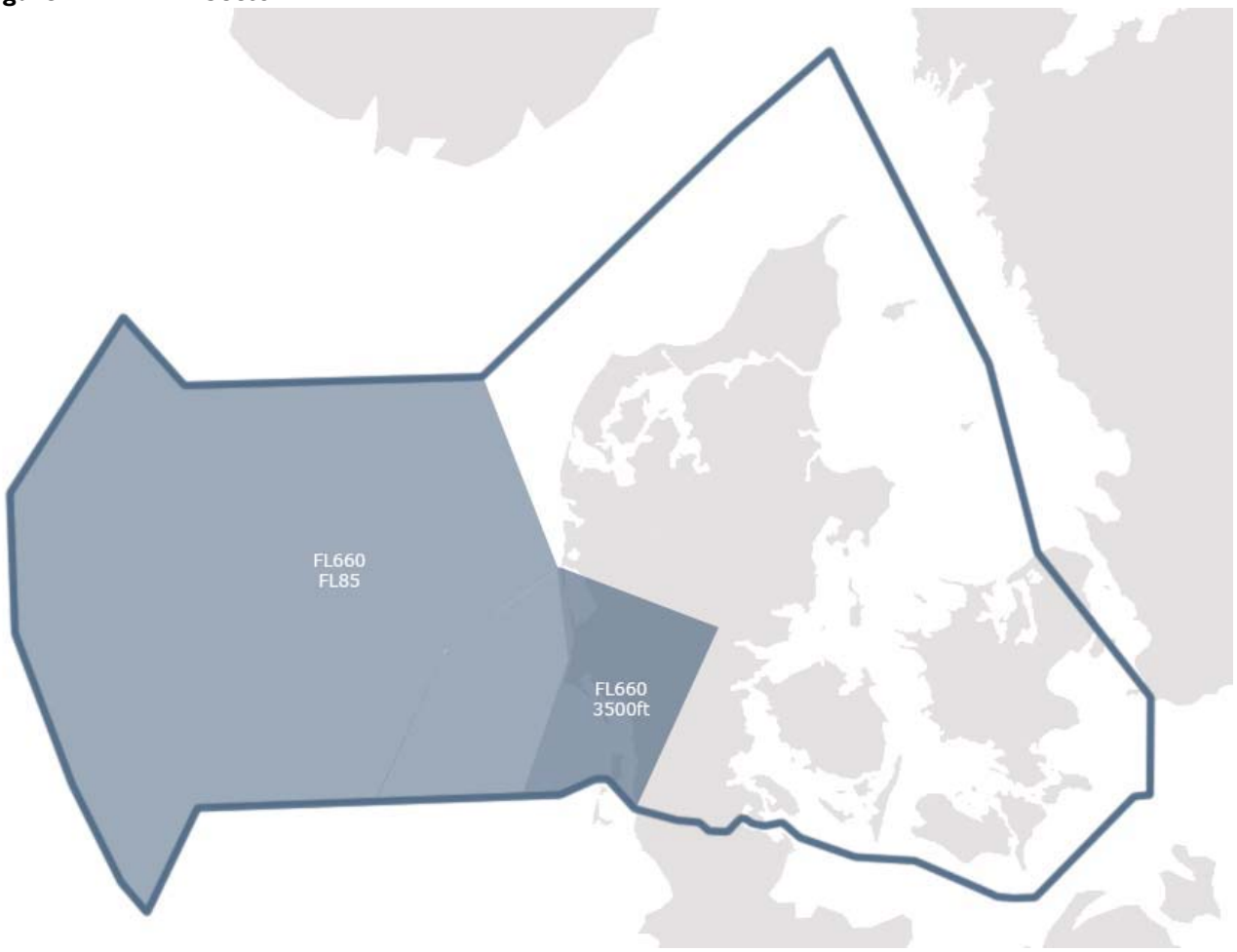
3.4.5.4 SECTOR N

Sector N covers the North sea. Most of the area below FL85 is uncontrolled. However the most eastern part is only uncontrolled up to 3500 ft as the rest of Danish airspace.

Table 20 – Frequencies in Sector V

ACC position	Callsign	Freq	Short ID	Long ID	Note
EKDK_CTR	Copenhagen Control	135.270	DK	EKDK_CTR	Primary freq
EKDK_N_CTR	Copenhagen Control	134.670	DN	EKDK_N_CTR	

Figure 14 – EKDK Sector N



3.4.6 ACC POSITION SPLIT

During normal ATC operations, all of EKDK airspace will be controlled by one ACC controller only, and obviously all the ACC sectors are managed by this one Controller Position. However, when it gets busy it may be necessary to split up the Controller Position.
As mentioned above a split into a maximum of 4 positions has been planned for. This can however easily be expanded by VACCSCA staff obtaining additional ACC frequencies from VATEUD.

It is important to understand at this point that one sector is not necessarily tied to a certain frequency. Also, there is no fixed sectorization at all. Instead, sectors may be grouped together depending on actual traffic requirements. For example, there may be a fly-in taking place at Aalborg EKYT. For this, sector V would be established as a separate sector, while all other 4 sectors are still managed by one other controller. Another example could be a fly-in to EKCH Copenhagen, while at the same time a group flight is taking place, overflying Danish airspace from west to east. For this, one would establish two controllers in sectors C and A to handle the traffic in and out EKCH, whilst a third controller would take care of sector V, N and S.

Note that the sector S is rarely busy enough to be staffed separately. It has therefore been assigned to the staff of one of the adjacent sectors. No separate frequency is therefore allocated for this sector.

The way to show sector split will depend on the radar client application you use.

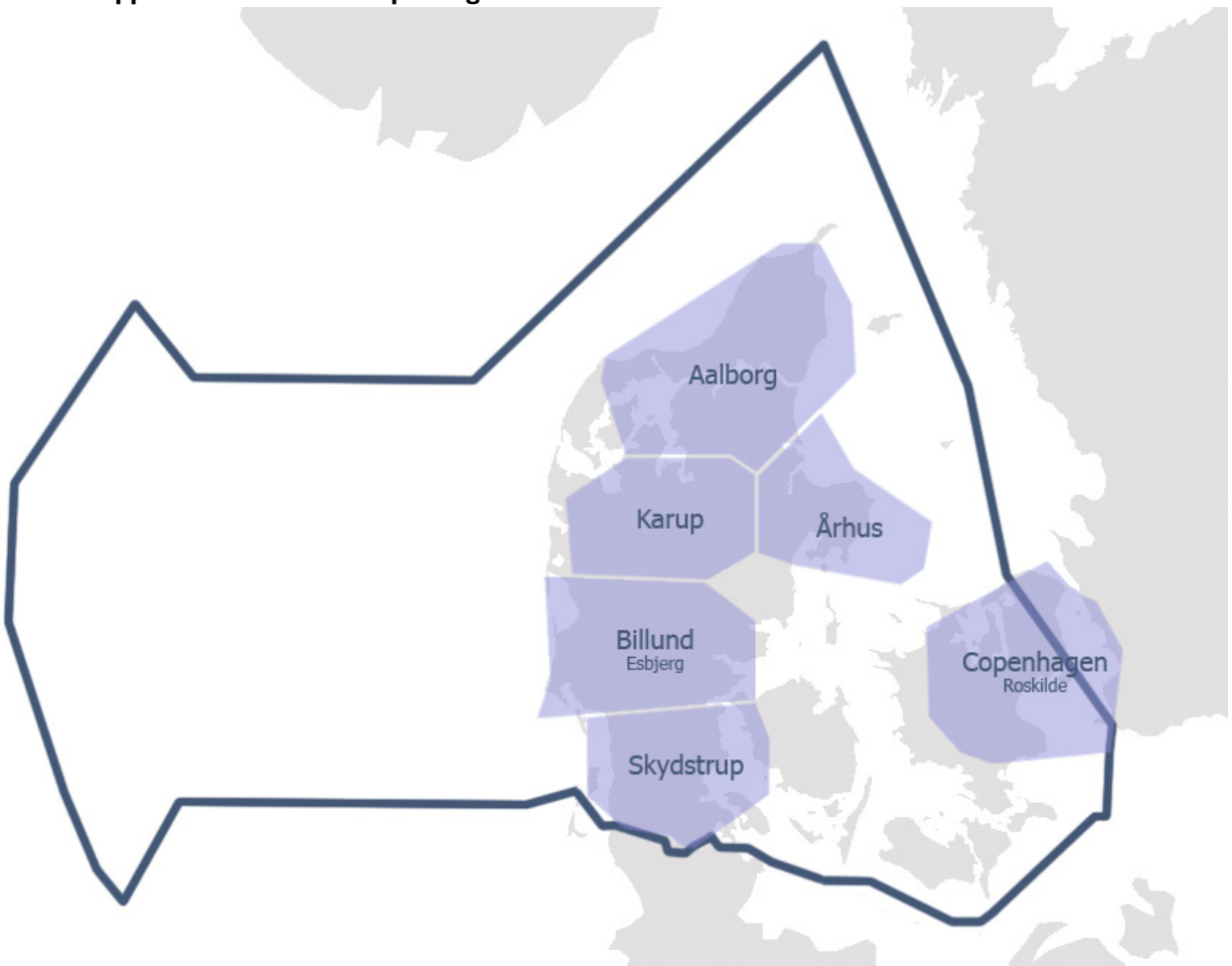
3.5 TMA

3.5.1 TMA'S / APPROACH SECTORS

There are 7 controlled approach sectors in Denmark:

- Copenhagen
- Billund
- Aalborg
- Århus
- Karup
- Skydstrup
- Roskilde

Figure 15 – Approach Sectors in Copenhagen AOR



The Roskilde sector is a special case as it lies below the Copenhagen Approach sector. Under normal circumstances the Roskilde sector is covered by Copenhagen Approach.
Esbjerg has its own Tower position, but terminal control will be provided by Billund Approach.
Furthermore there are 4 AFIS sectors in Danish airspace.

3.5.2 BORNHOLM

A special case to bear in mind is EKRN (Bornholm/Rønne). The Tower position (Control Zone) at Bornholm falls under Copenhagen AOR, but the approach airspace is covered by Sweden AOR through sector ESMM-L (Sweden Control). If the Tower position at Bornholm is online this ATC interacts with any Sweden Control (ESMM_APP / ESMM_CTR / ESOS_CTR) online. If there is no ATC online at Bornholm the tower position shall be covered by Copenhagen Control. The airspace outside and above the Control Zone (above 4500 ft) is controlled by the Sweden Control sector ESMM-L.
If you as EKDK ACC or EKCH APP have an aircraft either inbound or outbound from Bornholm check if any Swedish ATC is on line. The traffic can be handled by either ESOS CTR, ESMM CTR or ESMS APP. For Instance if the filed route is EKRN to EKCH, and the traffic volume is low Swedish ATC may let you keep the aircraft under your control.

3.5.3 AFIS AIRPORTS

The 4 AFIS airports in EKDK are (From North-west to South-east):

- Sindal
- Stauning
- Sønderborg
- Odense

AFIS airports in Denmark are uncontrolled airports, where an AFIS Position may provide advisory services (weather, traffic, airport conditions) only.

In case both the pilot and the ATC are familiar with AFIS procedures it can be agreed to simulate AFIS procedures.

Earlier Thisted also was an AFIS airport. But from June 2007 the facility was taken out of service, and the airport is now uncontrolled.

3.5.4 ARRIVALS AND DEPARTURES & STAR/SID

Only two airports in Denmark have standard instrument departure routes (SID): Copenhagen Kastrup (EKCH) and Billund (EKBI) Airport. From other airports aircrafts will departs and fly runway heading and turn to the first waypoint (naturally under ATC control). If an approach/departure controller is online you can benefit from coordinating with him, how departures should be handled. Copenhagen Kastrup is the only Danish airport with standard terminal arrival routes (STAR). Pilots should file flight plans to the Entry points to the STARs, and follow standard approach procedures from there. Alternately the ACC or APP controller may provide vectoring for an approach, which will shorten and more efficient approach route

Even if the approach position is online at Copenhagen, you as ACC still need to give the aircraft the inbound clearance. Look at the Copenhagen Kastrup EKCH section on how to use the STARs.
For other airports coordinate with the approach controller how to hand over arrivals. Under each airport section in this document you are able to find guidelines.

3.6 AS REAL AS IT GETS – NOTAMS AND NAVIGATIONAL WARNINGS

Notice to Airmen (NOTAM) are messages of changes to the published information in the AIP in real world aviation. On VATSIM we update and filter these NOTAMs on a daily basis providing pilots and ATC's with the newest and relevant NOTAMs. You can always check the latest NOTAM on the VACCSCA webpage. The NOTAMs displayed on the website are only those relevant to a flight-sim environment – that means we only publish those we can simulate.

As an ATC you should check the NOTAMs on the webpage before you log on, and use the NOTAMs when providing your service.

The navigational warnings are another source of airspace information. They tell you which danger-areas are in use, when and up to what altitude. When this manual was written you could find the daily navigational warning at the Royal Danish Air Forces Tactical Air Commands webpage www.ftk.dk (Or use this direct link: www.flv.dk/milais/Navwarframe.html)
We encourage you as an ATC to use these sources of real world information when you provide service to pilots in order to make the simulation as real as it gets.

4 COPENHAGEN KASTRUP EKCH

Copenhagen Kastrup is the largest airport in Denmark and also the largest in Scandinavia and is located on the island Amager 10 km east of Copenhagen City. Due to the high intensity of traffic to and from EKCH separate ATS positions are established fro Delivery, Ground, Tower, Departure, and Approach.
This section provides you with information on procedures in and around Copenhagen Kastrup. For a walkover of the different ATC positions please refer to section 4.6 ATS positions.

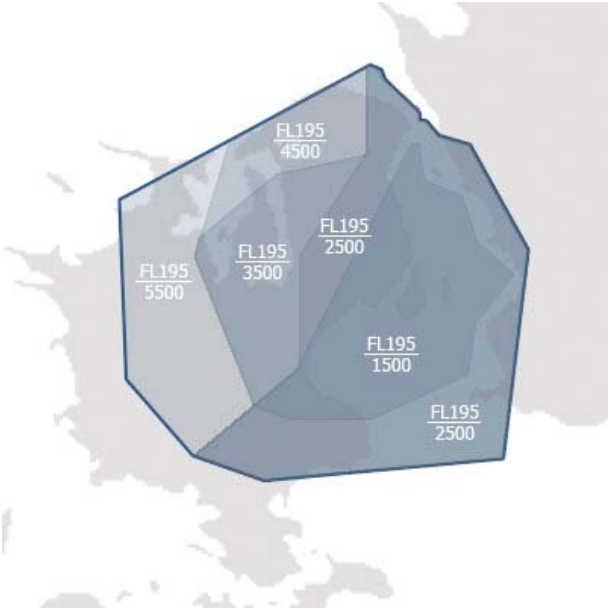
Close to Kastrup you find Copenhagen Roskilde (EKRK). Roskilde has it's own airspace that lays below the airspace controlled by Copenhagen Approach. However the Roskilde approach sector and tower can be controlled by the Copenhagen Approach controller. More on this in section 4.6.5.1.

4.1 AIRSPACE

The Copenhagen Area reaches up to FL195 and is class C. The floor varies between 1500 ft to FL55 depending on the distance from Copenhagen Kastrup. The levels can be seen on the map to the right.

In real life the ATC put a lot of effort into avoiding traffic over flying populated areas at low levels. SID / STAR and approach routes have been defined to limit the impact of the low level flights, and with radar vectoring aircraft should where possible be kept above 3000 ft while over land.
As virtual controller you are encouraged to follow the same procedure.

Figure 16 – Sub sectors Copenhagen approach



Embeded within the Copenhagen Area sector you find the Roskilde Approach sector. The floor of the Copenhagen Approach airspace indicates the roof of Roskilde Approach.
On VATSIM the Copenhagen Approach controller under normal circumstances also controls the Roskilde Approach Sector. For information about the Roskilde approach sector please reefer to the Roskilde section.

4.2 AERODROME

This section covers the basic layout of the airport, such as runway use and use of stands.

4.2.1 RUNWAY LAYOUT AND USAGE

The airport has 3 runways. Two parallel runways 22R-04L and 22L-04R and one crossing runway 12-30. The two parallel runways takes departing and arriving traffic over the sea (Øresund to the north and Køge bugt to the south), which limits the issue with noise over populated areas. For this reason the runways 04-22 will be maintained as the preferred runways until the crosswind factor is larger than 15kt. All aircraft may request 12-30 (eg. if cross wind component causes them concern during takeoff or landings).
The right runway (22R or 04R) is normally used for departure and the left (22L or 04L) is used for landings (Easy to remember as "Left stands for Landing").

There are a few general rules of thumbs to be followed:

- The runways 04/22 are the main runways
- The left runways are normally used for landings
- The right runways are normally used for departures
- The RWY 12/30 should only be preferred runway when the crosswind component on RWY 04/22 exceeds 15kt
- When RWY 22 active, only RWY 22L should be used between 2300-0600 (local time)

Runway 12/30 may in particular weather situations be used in combination with Runway 04L/22R as these do not cross each other. However this combination is not standard procedure in Copenhagen and will therefore not be covered in this manual.

With regard to the SID and STAR it is of no matter if either the right or left runway is used for landing/departing. It's the same SID/STAR that should be used. Furthermore the division between approach (or departure) sectors isn't affected by the use of left or right runway.

On VATSIM the traffic level normally doesn't reach the same amount as real live operations. However we encourage the controllers to use the runway layout as it would at the same time of day in real life in order for these procedures to become backbone knowledge.

4.2.2 GENERAL USE OF TAXIWAYS

The runway layout in Kastrup results in the two parallel runways being used 95% of the time.

There are two main routes to the main runways TWY A (04L/22R) and TWY B (04R/22L). Depending on the active runway one or the other is used for departing and arriving traffic.
Between TWY A and TWY B the two taxiways TWY C and TWY D is located. These can be used for giving aircrafts a shortcut. Normally they are used in connection with taxi to/from runway 04R/22L.

On the apron there are two perimeter-taxiways TWY Y and TWY Z. TWY Z is used for departing traffic and TWY Y for Arriving traffic.

Runway 30 can be used for arriving traffic taxiing to the domestic terminal. However don't use the runway in the other direction (From domestic terminal to active runway), as the pilot might miss the exit and cause a runway intrusion at runway 22L!

All runways (Including RWY 12/30 even when not active) are controlled by Tower. So handover between Ground and Tower must take place between TWY Z and RWY 12/30. It's very tight, but ask pilots to call the new controller using "callsign only".

4.2.2.1 HOLDING POINTS

At the runways there are sets of adjacent holding points (Such as A1, A2, A3, B1, B2, B3) that can be used for sequencing the departing traffic. Having two aircrafts, where the last is delayed; the delayed aircrafts can be put forward in sequence by assigning a free holding point for line-up ahead of the other aircrafts. Likewise in order to reduce separation you may choose to split departing aircraft in accordance with their assigned SID, such that you most efficiently separate aircrafts after departure (two aircraft on the same initial SID route would require extra separation, as compared to an aircraft turning left right after takeoff followed by one turning right after takeoff).

4.2.2.2 RESTRICTED TAXIWAYS

In Kastrup taxi clearances are given with the taxiways that should be used. There are no standard taxi routes on the apron areas (To and from the gates), like seen at Stockholm Arlanda.
However for the area controlled by Tower restricted taxi routes have been detailed. This isn't standard taxi-routes (A route from A to B that the pilot must follow) but a list of large aircraft restricted to certain TWYs with geometry to accommodate these aircraft. As a general rule of thumb all aircrafts in Category B and C can use all taxiways. For large aircrafts the use of the following taxiways are not permitted:

Table 21 – Taxi restrictions for certain aircrafts

ACFT Type	Taxiways not allowed	Other
A300, A310, B707, B757, B762, DC8, Il62	K3 and C (south)	
B763 & T154	The above mentioned and: G2	
B764, DC10, IL86, L1101, MD11	The above mentioned and: K1, A3, A4, A7, A8, A9, E2, E3, E4, B2, G2	
A332, A333, A342, A343, B747, B772, IL96	The above mentioned and: C (North)	
A345, A346, B773	The above mentioned and: K2, A (north of RWY 12), D, A1, A2, A5, A6, A10, B2, B3, B4	No Take-Off 22R. Landing 04L vacate via E1 Parking via TWY R to East Apron.
AN124, C5 galaxy	The above mentioned and: Apron North	No use of RWY 22R/04L Parking on Apron East

Even though there are no fixed standard taxi routes Appendix J provides you with a list of proposed taxi routes when runway 04 or 22 is active.

4.2.3 PARKING

On the chart below you can see the Kastrup terminal area divided into zones.

Figure 17 – Parking areas at Copenhagen Kastrup

Scheduled traffic is distinguished between:

- Destination (Domestic, Schengen, Non Schengen)
- Aircraft-type (Prop, medium or heavy)
- Airline (Star alliance member)

There isn't a strict rule on how to park aircrafts, but these guidelines can work as a rule of thumb and help you in assigning a gate:

- Domestic area (Gate A25-A35) is used by both jets and props for domestic flights (Not including Faroe Island and Greenland). Marked blue.
- Finger A is used by medium non-Star Alliance members.
  The 3 gates at the end of Finger A (A14-A17) are for non-schengen flights – marked cyan. The other gates are Schengen flights. Marked yellow.
- Finger B and D-gates are mostly used for Star-Alliance companies within Schengen. Marked green.
  Stand B5, B7, B9 can be used by aircraft type B757 and A332.
- Finger C is used by heavy aircrafts. Stand C10 is Schengen. The rest Non-schengen. Marked purple.
- The E-stands and F-stands are used by international turboprops and regional jets. However try filling the F-stands before taking E-stands into use. Marked orange.
- The H stands and "Apron North" is used for longer parking periods (more than a few hours). Marked light blue. Also the three parking spots RI, RII, RIII at "Apron West" are used as long term parking by Cimber Air.
- Cargo terminal is located at the eastern apron (Stand G112 – G137). Marked light green.
- GA parking is located at stand E60 and the G-stands in the northeastern corner. Furthermore stand W1 (At Apron West) is used for VIP flights. There is also a GA parking stand at the end of Taxiway G. All marked red.

The table below can be of assistance.

Table 22 – Parking at Copenhagen Kastrup

	STAR ALLIANCE			NON STAR ALLIANCE		
	Prop Regional jet	Medium	Heavy	Prop Regional jet	Medium	Heavy
Domestic	A25-A35	A25-A35	C43-C49	A25-A35	A25-A35	C43-C49
Schengen	F91-F98 E-stands	B finger	C10-C23	F91-F98 E-stands	A4-A12 + A18-A25	C10-C23
Non Schengen	F91-F98 E-stands	C25-C43	C25-C43	F91-F98 E-stands	A14-A17	C25-C43

Note that as street numbers the gate numbers are separated with Even and Odd numbers on each side of the fingers.

4.3 DEPARTING AIRCRAFTS

This section covers how to handle traffic departing from Kastrup from clearance to being handed over to the Center position. It doesn't cover how to staff positions. For this information please refer to section 4.6.

4.3.1 CLEARANCE

Provided by default by EKCH_DEL.
Clearances in real life are normally given via text (ACARS), but on VATSIM we still give clearances via voice when possible. The clearance should follow the CRAFT rule:

C Clearance limit
R Route (incl. runway, departure route and enroute routing)
A Altitude (initial and final)
F Frequency after departure
T Transponder code

Make sure the non-standard departure is well communicated to the other controllers.

4.3.1.1 C - CLEARANCE LIMIT

On VATSIM we usually clear the aircraft all the way to the Destination Airport. This is a simplification of the real world situation, where an aircraft may in some situations not be cleared all the way to the destination, but eg. only to a fix on the route.

4.3.1.2 R - ROUTE

The pilot should be informed of the runway he can expect for departure, the SID and if the route he has filed in his flight plan is acceptable, or if you have any amendments to it.
All pilots should be encouraged to follow a SID departure out of EKCH. 4 sets of departures have been defined. The SID name or ID is constructed of 3 parts:

- Last waypoint on SID
- Version number
- A letter relating to the active runway:
  A - 04
  B - 12
  C - 22
  D - 30

An example could be SIMEG6C SID, which is a departure route via SIMEG, version 6 relevant for 22L and 22R departures.

The same letter identification is used in the STARs and you will notice that EKCH staff often talk about Alpha, Bravo, Charlie, or Delta procedures in use. This refers to this particular identification.

EKCH have the following exit fixes defined (clockwise from the north):

- ASTOS - Prop
- KEMAX - Jet
- SIMEG - Jet

- BALOX - Prop
- BISTA - Jet
- MAXEL - Prop
- TOBIS - Jet
- DOBEL
- SORGA - Jet
- MIRGO - Prop
- NORA

See section 4.3.5 for details on the SIDs.

Be aware that some pilots by error file first points in their flightplan other than the fixes used in the SIDs. Some even file entrypoints as exitpoints. This should not be permitted, and you should instruct the pilot to correct his flightplan, or if you have time do it for him.

In case an aircraft is unable to fly a SID, the aircraft should be instructed to fly runway heading after departure, for vectors to one of the above exit fix. ALL flightplans out of EKCH should start with one of the above exit points, independent of the aircraft flying a SID or being vectored.

4.3.1.3 A - ALTITUDE

The SIDs from EKCH include an initial climb clearance of:

- A's,and C's: FL070
- B's, and D's: 4000'

Aircraft not flying a SID are probably best cleared to 4000'. This will give the Departure Controller a better flexibility in planning the departure route. He can always after initial contact give a higher climb altitude if the situation allows it.

See section 4.3.5 for details on the SIDs.

As to the final flight level, remember the NEODD rule (east odd, west even)

4.3.1.4 F - FREQUENCY

In low and medium traffic situations Departures are handled by the Approach controller.
See section for 4.6.5 the different frequencies.

4.3.1.5 T - TRANSPONDER CODE

EKCH has been given SSR codes in the interval 7300 -7347.

4.3.2 PUSHBACK

Provided by default by EKCH_GND

Pushback is at the fingers independent of taxi routes, and no nose or "face" direction is therefore needed. However provide information on this in case you need subsequently to give non standard taxi instructions. For gates like A12-A17

(end of finger A) it is a good idea to provide the pilot with the information. Directions for these gates would be "face NW" or "face SE".

4.3.3 TAXI ROUTES

For general information on taxing at Copenhagen please reefer to the section 4.2.2.

On the apron taxiway Zulu is used for departures.

4.3.3.1 TAXI WHEN RWY 22 ACTIVE

With 22R active for departure, departing aircrafts will need to be taken down on TWY A towards 22R. Use the taxiways A1, A2, A3, and A4 for sequencing of the departing aircraft.

If there is no arriving traffic, departing aircraft from finger C and F stands can taxi via "the back door" which is TWY B + E1. As the aircraft will be going the wrong way on a "one way street" you need to make sure there isn't any traffic on TWY B, or that it will hold short. Coordinate this with "Tower Arriving".
It has been seen that pilots that isn't well known in Kastrup can mistake Taxiway B for TWY A, and taxi down TWY B. If you note this make sure to have them turned onto taxiway E1.

Taxiway C is for arriving traffic so TWY D should in general only be used in co-ordination with the arrival flow.

If RWY 22L is in use for both arrival and departure (This is normal night procedure) departing aircrafts must line up via V1. I.e. aircraft are not allowed to use V2 for line-up.
Aircrafts parked on the cargo-apron or General Aviation area can benefit from departing via 22L, as it shortens the taxi-distance quite a lot. This also goes for day-time operations. However you need to check with TWR and APP that there is an available slot in the landing sequence before giving the taxi-clearance.
Large aircrafts from Apron East should cross RWY 22L via V2 and then line up on RWY 22L via V1. Again do not use V2 for line up!

4.3.3.2 TAXI WHEN RWY 04 ACTIVE

With 04R as active for departure traffic should be taken down TWY B for departure. Traffic can be sequenced using TWY B1, B2 and B3.
Many aircrafts can make and short cut by turning on to TWY D, TWY C and then join TWY B. Attention should be given to outbound traffic merging at the intersection of TWY B and TWY C, as the intersection angle is quite sharp.

If 04L is active for departure traffic should be taken down A. Note the potential conflict for aircraft that have just landed on 04L, and of the habit to speed taxi onto A. These arrivals may need to be instructed by EKCH_TWR to hold short of A after exiting 04L.

4.3.3.3 TAXI WHEN RWY 12 ACTIVE

When runway 12 is active aircrafts can be lined up via K1, K2 & K3. However notice that K1 is not allowed as Take-off position. The aircraft have to roll forward to the threshold before applying take-off thrust.

Large aircrafts should only use K2 for departure.

4.3.3.4 TAXI WHEN RWY 30 ACTIVE

When Runway 30 is active the taxi routing is a bit more complex as the aircrafts should cross runway 22L via V2 and then proceed on TWY G.
However the charts and the different sceneries don't match on the G-taxiways. So you have to be a bit flexible with the taxi clearance. Instead tell the pilot to hold short/line-up via Taxiway G1 or G2. That way the pilot knows where to end up.

4.3.4 PRIOR TO DEPARTURE

To ensure an efficient traffic flow you should line up the next departing aircraft while waiting for the separation to be okay to the aircraft in front.

After take-off the pilot shall by himself contact the appropriate departure controller. This may be repeated to the pilot as part of the take-off clearance.

4.3.5 SID, STANDARD INSTRUMENT DEPARTURE

At EKCH the different departure routes' designator depends on the runway. This is the same for both arrival and departure routes. This means that A-routes always are for runway 04, B-routes for RWY12, C for RWY22 and D-routes for RWY30.

At Copenhagen there are different SID's depending on aircraft type. Some are only to be used by jet-aircrafts and other only by props and turbuprops. Excepted from this are the DOBEL and NORA departure which can be used by both types.

The different SIDs can be view in the table below – going clockwise,

Table 23 – SIDs at Copenhagen

Departure	ACFTtype	Approx Heading
ASTOR	Prop	ESSA
KEMAX	Jet	ESSA
SIMEG	Jet	EKRN, EPWA
BALOX	Prop	EKRN
BISTA	Jet	EDDF, EDDB
MAXEL	Prop	EDDB
TOBIS	Jet	EGLL, EHAM
DOBEL	Both jet and Prop	EIDW, EKBI
SORGA	Jet	EKAH, EKYT, ENZV
MIRGO	Prop	EKAH
NORA	Both jet and Prop	ENGM, ESGG

4.3.6 DEPARTING AIRCRAFTS IN GENERAL

The Departure Controller needs to ensure departing traffic is properly separated by weight or wake turbulence category and Radar separation at all times. This actually means that the IFR departure clearance is not valid until Departure Control advises TWR that the aircraft is released. With this principle it becomes

the privilege of the Departure Controller to advise Tower when he is allowed to clear an aircraft for take off. However we recommend that the controller handling the departing traffic pre-arrange the minimum separation you wish TWR to adhere at all times and then grants TWR an automatic release for all traffic. As a rule of thumb apply 3 miles lateral separation or 1000ft vertical separation on departing aircraft. You should again inform TWR that he should mix departures, such that aircraft do not follow the same initial SID route.

Departing traffic should automatically contact the departure position (or Approach if no DEP online) after passing 1000ft. The aircraft is climbing to the initial altitude of either 4000 ft or FL70. So as departure controller you need to clear it further up to FL 190 (top of EKCH Area Sector) or final FL if lower. Note that departing Props via Sweden, should not be cleared to a maximum level of FL140 prior to handoff.

Departing traffic continue straight ahead for a couple of miles before making the first turns. Aircraft flow can benefit from a more direct routing than the published STAR. An example is KEMAX departures from runway 22.
But note that a direct routing will result in the aircraft passing the STAR routes which might cause conflict as the departing aircraft will be at a lower level than the SID was designed for.
Your direct routing should extend no further than the area you control, unless agreed with the next controller. However for flights departing via Sweden an agreement has been made so that you can direct the aircraft to the end of the SID even though this is in Swedish airspace. Always coordinate with controllers affected

Our frequent Guest the MD80 climbs like a rocket and would therefore be at the anticipated altitude when passing ALMA and CDA anyhow. So here it is pretty safe to give a shortcut, provided also that you don't have other other preceeding traffic.

If an aircraft is unable to follow the SID, the aircraft is cleared to 4000'. Generally Departure should try to vector the aircraft as close as possible to the SID route as these are designed to minimise the possibility of conflicts arising with Arriving aircraft.
The layout of the SIDs are amongst other designed to minimise the "noise nuisance" for the population in Copenhagen. Therefore the first turns are not made before either clear of land or high enough (above 3000') to avoid annoying the population.

As Departure Controller you may at times need to instruct an aircraft to expedite climb or to maintain a set Rate of Climb, this for instance can be to avoid conflicting arriving traffic. You will note in the SID definition that a minimum climb rate of 400 ft / nm is required up to FL70.
Most aircraft climb well, but in particular fully loaded B747s, and A340 can be very slow climbers.

4.3.6.1 SPEED RESTRICTIONS ON DEPARTURE

Also for noise abatement reasons high speed departures should only be approved to aircrafts not overflying land at low level.

The airspace around Copenhagen is Class C which means that there is no general speed restriction. However for departing aircrafts there is a speed restriction of max 250 kt IAS below FL70. So above FL70 the aircrafts are allowed to speed up without ATC approval.

As most flightsim pilots know the 250/FL100 rule thay are likely to follow this rule, and as ATC you can't expect all pilots to speed up after passing FL70.

4.3.6.2 DEPARTING RWY 04 – ALPHA PROCEDURES

The aircrafts are taken out over the waters of Øresund before making the first turn. For right turning traffic you may, choose to shorten the 040 hdg leg, by giving the aircraft a direct routing. But you should note that this will result in the aircraft passing the STAR routes of ALMA and CDA at lower levels than the SID was designed for.
Aircrafts that proceeds over the water can be given high speed departures. Those that overfly land and urban areas should not be given high speed departures at low altitudes.

The initial SID climb for 04 departures is FL70.

Some of the standard departure routes take the aircrafts over Copenhagen suburbs. Please avoid approving high speed departures for these aircrafts or vectoring low level aircrafts over the city.

Note that the KEMAX and ASTOR departures only stay within Danish airspace for a short while.

4.3.6.3 DEPARTING RWY12 – BRAVO PROCEDURES

Runway 12 is seldom used due to low capacity on the runway and noise pollution to the west of the airport.
Therefore the runway 12/30 is generally only proposed from ATC when the sidewind component on runway 04/22 exceeds 15 kt.

Most departures from Runway 12 stay over water for a long time and can be given direct routings to the end of the SID and high speed departures when possible.

The initial SID climb for runway 12 departures is 4000 ft.

Note that SIMEG and BALOX departures only stay within Danish Airspace for a short while.

4.3.6.4 DEPARTING RWY 22 – CHARLIE PROCEDURES

Runway 22R is used for departures under normal circumstances. However there are a few special cases where runway 22L – not RWY 22R – is used for departures.
First case is between 2300-0600 (Local time), where aircrafts should depart from 22L.
Second case is very large aircrafts, that should be departed via RWY 22L at all times. The aircraft-types in mind are B777-300, A340-600 (Not A340-300 or B747) This is due to limitations on the taxiways connecting RWY 22R. For a details on which TWYs to use see the Ground Movement Charts issued by SLV.

The aircrafts are taken out over the waters of Øresund before making the first turn. Avoid issuing direct routings for aircrafts passing populated areas in low levels. Issuing directs to left turning aircrafts (KEMAX, ASTOR, SIMEG and BASLO) might result in the aircrafts passing the STAR routes of ALMA and CODAN, at lower levels than the SID was designed for.

Some of the standard departure routes take the aircrafts over Copenhagen city. Please avoid approving high speed departures for these aircrafts or vectoring low level aircrafts over the city.

The SID initial climb for runway 22 departures is FL70.

4.3.6.5 DEPARTING RWY 30 – DELTA PROCEDURES

Runway 30 is seldom used due to low capacity on the runway and noise polution over Copenhagen City by departing aircrafts. Therefore the runway 12/30 is only proposed by ATC when the sidewind component on runway 04/22 exceeds 15 kt.

All departures from Runway 30 have to overfly Copenhagen City. Avoid approving high speed departures.
Avoid issuing direct routings for aircrafts passing populated areas at low levels.

The initial SID climb for runway 30 departures is 4000 ft.

4.4 ARRIVALS

4.4.1 ENTRY POINTS

Inbound Traffic to EKCH must at all times enter Copenhagen Area via one of the following Entry Point:

Table 24 – Entrypoints

Entry point	STAR	Traffic from
KOR	LUGAS	traffic proceeding form BeNeLux, UK and Western Germany and all southwest EU inbound from ALS and VES
CDA	CODAN	traffic proceeding from eastern Germany, central and southern Europe
ALM	ALMA	aircraft proceeding from Poland, Russia, etc but also Bornholm
SVD	SVEDA	aircraft proceeding from Sweden and Finland but also eastern Norway incl. Oslo
TNO	ROSBI	usually for domestic traffic and from western Norway, Iceland, and USA and all inbound from RAM.

These are the only acceptable Entry points to be used for arriving traffic.

In order to aid the general flows of traffic to the airport use Standard Terminal Arrival Routes as much as possible. Of course flexibility is required when an aircraft does not have the required or latest charts, even so, you should vector the aircraft via the above Entry points, and to follow the STAR for as long as possible.

4.4.2 STAR, STANDARD TERMINAL ARRIVAL ROUTES

The aircraft shall be given the inbound clearance by the ACC controller prior to handover to the EKCH Approach controller and in good time prior to the aircrafts entrance to the Copenhagen Approach Area. If possible the aircraft should be given information on STAR at a distance of 120 NM from EKCH, as he would have the time to update his descent planning accordingly.

EKCH high intensity STARs (A, B, C, D) are very simple and are inbound to the Entry points where a passing altitude have been defined, followed by an outbound course from a VOR. Vectors are required from this heading and hereon to the approach.
Low intensity RNAV STARs (M, N) have also been defined for 04 and 22, which are used at night or during low staffing situations. These STARS are point to point routing from the Entry points to the Final Approach Fixes (FAF) of 04L and 22L.

The aircraft joins the STAR outside Copenhagen Approach airspace, and so they can't be vectored before inside the approach airspace.

Under low traffic circumstances the goal for the approach controller is to get the traffic aircrafts to the final in the shortest distance and in the shortest time. This is normally done by vectors more or less direct to the Final Approach Point with a few vectors to get the aircraft aligned on the final.
The following intersections are of frequent use:
04L: BASLO
22L: LAMOX

Please note that ACC doesn't in the initial descent clearance assign left or right runway (RWY 04 or 22 is active).

The approach controller needs to advise the pilot of which runway to expect as soon as possible.

4.4.2.1 RWY 04 ARRIVALS

Runway 04L is generally used for landing.
If no other aircraft is preceding the aircraft on runway 04 landing could be approved a "Long Landing". Long landing means that the aircraft doesn't have to vacate the runway as soon as possible but can vacate at the far end of the runway. Different companies have different policies on how to conduct long landings. Some may hover above the runway and land midway down the runway. Other shall land after the threshold but can roll to the end of the runway. The long landing saves taxi times for the pilot. However if there is a second aircraft on close final the long landing shouldn't be approved.

If the load of arriving aircrafts is very high you can also use runway 04R for arrival. However the distance between the left and right runway is to narrow to use independent parallel operations. See 4.4.3.5 for details on parallel operations.

The Final Approach Point (FAP) is 9.3 nm from the threshold, and aircrafts on an ILS approach should be level at 3.000 ft prior to reaching this point.
Close to the FAP is the significant intersection BASLO. Even though this point is a bit offset of the ILS it is commonly used as a navigational fix, giving arriving

aircrafts a direct routing towards the ILS (e.g. "SAS123 direct BASLO"). However the pilot still needs vectors for the turn towards the ILS prior to reaching BASLO

Runway 04L is CAT II certified.

4.4.2.2 RWY 12 ARRIVALS

Runway 12 is only proposed by ATC when the crosswind factor on runway 04 or 22 exceeds 15 kts.

Runway 12 is CAT I certified.

4.4.2.3 RWY 22 ARRIVALS

The 22 arrivals are used most of the times at Copenhagen. Runway 22L is generally used for landing. Runway 22R should only be used is RWY 22L in some way is closed.
SVEDA – which is a busy entry point – is located fairly close to the final approach fix for runway 22, be make sure these aircrafts is descended in good time.

The Final Approach Point (FAP) is located 9.3 nm from the threshold, and aircrafts on an ILS approach should be level at 3.000 ft prior to reaching this point. Close to the FAP is the significant intersection LAMOX. Even though this point not is a part of the ILS approach it is commonly used as a navigational fix giving arriving aircrafts a direct routing towards the ILS (e,g. "SAS123 direct LAMOX"). However the pilot still needs vectors for the turn towards the ILS prior to reaching LAMOX.

If the load of arriving aircrafts is very high you can also use runway 22R for arrival. However the distance between the left and right runway is to narrow to use independent parallel operations. See 4.4.3.5 for details.

Runway 22L is CAT IIIc certified.

4.4.2.4 RWY 30 ARRIVALS

Runway 30 is only proposed by ATC when the crosswind factor on runway 04 or 22 exceeds 15 kts.

If no aircraft is preceding the aircraft on runway 30 the landing aircraft can be approved a "Long Landing". Especially domestic aircraft can benefit from this.

Note that the Alma arrivals only stay in Copenhagen Approach airspace for a very short time, so pay special attention to these.

Runway 30 is CAT I certified.

4.4.2.5 RNAV ARRIVALS

For runway 04 and 22 RNAV arrival-procedures are available. These are labelled Mike and November,
The RNAV arrival procedure route the aircrafts all the way to the ILS final. Although the use of RNAV procedure may seem as a good idea as it reduces the workload it also has a huge impact on your ability to move around traffic. Therefore the RNAV arrival procedures are only used at night time when things

are very calm. On VATSIM we encourage you to use the A-B-C-D (Vector) arrival procedures in order to simulate real life operations, and be familiar with procedures at high intensity situations.

4.4.3 ARRIVAL PROCEDURES IN GENERAL

The way the vectoring should be carried out of course depends on the level of traffic. The main objective is to get the aircraft to the final as efficiently as possible, but still following the regulations and guidelines (Such as no low overflying Copenhagen city & suburbs).
In high density situations with both Approach and Final (in some countries referred to a director) online the aircrafts have to be vectored in a different matter. The aircrafts should be sequenced initially by the approach controller. Thereafter the aircraft should be descended to 5.000 ft and aligned on a downwind leg appx. 5 nm abeam of the active runway.

4.4.3.1 LOW DENSITY PROCEDURES

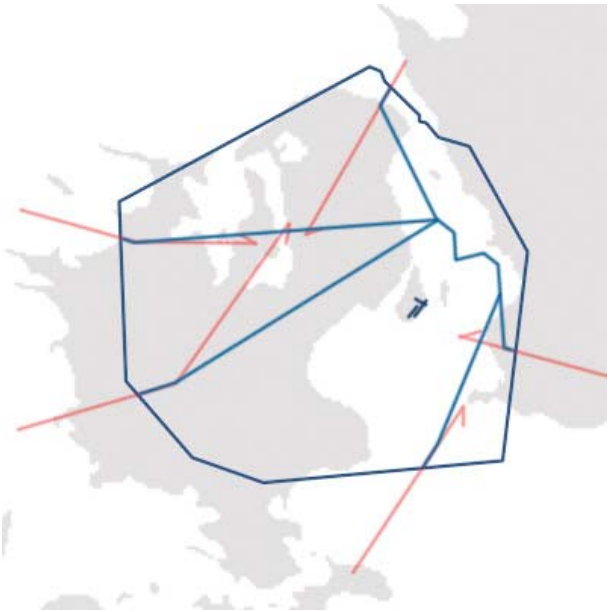
When the traffic density is low you should aim at getting the aircrafts aligned on the final efficiently.

The aircraft doesn't have to follow the lines on the SID charts all the way to the end of the red arrow. As soon as practical turn the aircraft towards the FAF. Aircrafts should be descended to 3.000 feet prior to the FAF, and this may require a less direct vectoring.

The map shows the typical traffic flow in low density situations when runway 22 is active.

Note that vectoring away from the STAR route of the aircraft towards the final until the aircraft is inside the area controlled by Copenhagen Approach.

Figure 18 – Low density procedures



4.4.3.2 HIGH DENSITY PROCEDURES

When the traffic starts to build up preparation for a more structured approach flow is needed.

Normally the approach positions will be split in 2 or even 3. In this case the Final approach controller will merge two parallel downwind flows of the aircrafts onto final approach.

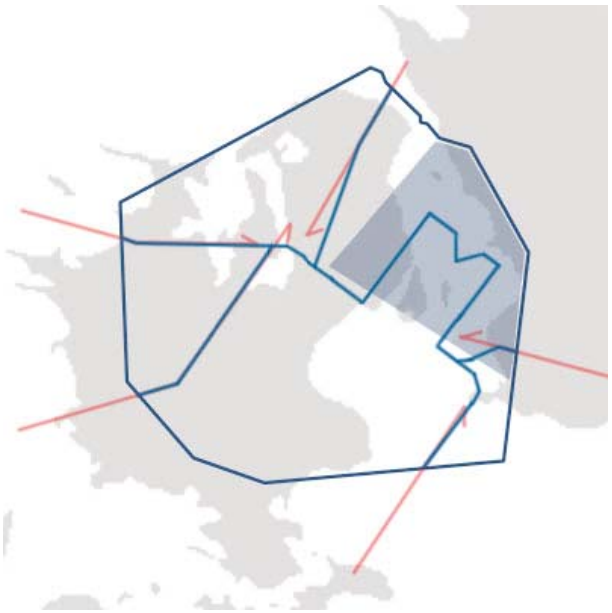
The other approach controller(s) need to have merged the aircraft streams into two downwind strings.

No later than when passing abeam the runway on downwind the aircraft should have been handed over to the controller on Final.

The turn onto downwind shall occur more or less abeam the airport in order not to conflict with departures. The figure shows an example of merging the arrival streams with runway 22 active. Southwest of the airport there is room the departures climbing.

Read more about the sectorsplit on Approach positions in section 4.6.5.3.

Figure 19 – High density procedures



4.4.3.3 SPEED RESTRICTIONS ON THE ARRIVAL

In general the Copenhagen Control airspace is Class C hence there is no general speed restriction.
However arriving aircrafts are restricted by the arrival procedures. In general aircrafts should fly max 250 kt. IAS after joining the STAR. Be advised that this also applies to aircrafts on the STAR above FL100.
This of course also applies to aircrafts not on a STAR procedure.
As most VATSIM pilots know the 250/FL100 rule they are likely to follow this rule, and as ATC you should be flexible with aircrafts "speeding" above FL100. In a friendly tone give them a speed restriction if necessary.
The following should further be kept in mind:

- The minimum clean speed (flaps and slats retracted) for medium size jets is typically around 230 kts.
- For tight vectoring (eg for interception of approach) and spacing speeds below 210 kts should be used
- To ensure separation is not lost on final, a minimum speed of 180 kts may be prescribed until 4-5 NM final, where after the aircraft should be allowed to slow to threshold speed at their own descression.

4.4.3.4 AIRCRAFT SEPARATION IN GENERAL

In general a horizontal radar separation of 3.0 NM and a vertical separation of 1000 ft shall be maintained within Copenhagen Area.

For final approach to RWY 04L and RWY 22L a minimum radar separation of 2.5 NM may be used between aircraft on final within 10NM from the threshold.

The procedure may be used provided that:

- The approach radar is operative
- Braking action is reported good and runway occupancy time is not adversely affected by slush, snow, ice or the like.

- Runway turn-off points are visible from the TWR or by use of SMR (Surface Motion Radar).
- The preceding aircraft is not of wake turbulence category HEAVY - B757 inclusive.
- The succeeding aircraft is of the same or higher wake turbulence category than the preceding aircraft.
- Aircraft approach speed is closely monitored by the controller.
- Pilots have been advised to vacate the runway rapidly.

4.4.3.5 DEPENDENT PARALLEL APPROACHES

Dependent parallel approaches may be performed to runways 04L/04R or 22L/22R.
When weather and runway conditions permit RWY 04L (22L) can be expected if not otherwise instructed by ATC.
The procedures may be expected daily 0500-2200 (local) if visibility is 800 M or more.

The procedures are as follows:

a. Decision concerning applicable runway will be passed by approach control to the individual aircraft at the latest on intermediate approach.
b. A minimum of 1000 FT vertical or a minimum of 3.0 NM radar separation shall be maintained between aircraft until they are established on parallel ILS's.
c. Minimum radar separation provided to aircraft established on the localizer course shall be 3 NM between aircraft on the same localizer course (with additional longitudinal separation as required for wake turbulence), and 2 NM between successive aircraft established on parallel ILS's.
   The minima mentioned above may be reduced when:
   • adequate separation can be provided by the aerodrome controller when each aircraft is continuously visible to the controller, or
   • each aircraft is continuously visible to pilots-in-command of the other aircraft concerned and the pilots thereof report that they can maintain their own separation, or
   • in the case of one aircraft following another, the pilot-in-command of the succeeding aircraft reports that he has the preceding aircraft in sight and can maintain separation.
d. Additional longitudinal separation will not be provided for wake turbulence reasons, between aircraft on final approach to 04R/22R following aircraft on final approach 04L/22L.

4.4.3.6 SEPARATION DUE TO WAKE TURBULENCE

The following requirements apply ("-" means no additional requirements in relation to the normal radar separation requirements. Weight Categories as follows:

- J - A380 (included for completeness)
- H - Heavy incl. B757
- M - Medium
- L - Light

Table 25 – Separation at Copenhagen

Succeeding Aircraft / Preceding Aircraft	J	H	M	L
J	4 nm	6 nm	8 nm	10 nm
H	-	4 nm	5 nm	6 nm
M	-	-	-	5 nm
L	-	-	-	-

4.4.4 APPROACH

4.4.4.1 ARRIVING TRAFFIC

Landing traffic should be told to contact Tower when the aircraft is established on the final and needed speed restrictions have been passed on to the PIC. The Radar Controller should not initiate a handoff to Tower, but should simply drop the target, and instruct the aircraft to contact Tower.

In high density situations aircrafts should maintain 180 kts until 4-5nm from the threshold in order to avoid loss of separation. Note that less experienced VATSIM pilots have a tendency to slow instead of maintaining minimum speed.

4.4.4.2 PRECISION APPROACH

The following table recaps the main data for the most frequently used Instrument Approach Procedures are summarized. For details reference is made to the individual IAP charts from www.slv.dk.

Table 26 – Table for the IAP at Copenhagen

Runway	Category	FAP	Alt	ILS freq	OBS	Missed App. point
22L	IIIC	D9.3 OXS	3000 ft	109.50	219	0.5 NM
04L	II	D9.3 CH	3000 ft	110.50	039	0.5 NM
22R	I	D9.3 KLK	3000 ft	110.90	039	0.5 NM
04R	I	D8.1 KAS	3000 ft	109.30	039	KAS VOR
12	I	D9.3 LLZ	3000 ft	109.90	121	0.5 NM
30	I	D9.3 OY	3000 ft	108.90	301	0.5 NM

4.4.4.3 PRECISION APPROACH. CATEGORY II/III OPERATIONS

The operations are subject to the following procedures and conditions:

a. ATC procedures
   • CAT II approaches to RWY 04L and CAT II/III approaches to RWY 22L will under normal conditions be allowed only if the runway is not used for departures.
   • Minimum Horizontal Separation between aircraft on final is doubled, i.e for CATII the minimum becomes 5nm, for CAT III the minimum becomes 10nm.

b. Pilot procedures
   Pilots who intend to carry out a Category II/III ILS approach are to use the following phrase:
   "Request Category II (or III) ILS approach runway ..... (mention runway

number)".
Above mentioned request shall be made to either SWEDEN CONTROL or to COPENHAGEN CONTROL and confirmed on first contact with COPENHAGEN APPROACH.
"VACATED RUNWAY" reports must not be given before established on:
- TWY A when landing on RWY 04L,
- TWY B when landing on RWY 22L.

c. When CAT III procedures is established vacate via TWY B1, B3 or B4 only.

4.4.4.4 VISUAL APPROACH

In real life visual approaches are often used at Copenhagen Kastrup. Experienced pilots often call "visual" as soon as they can, giving them the option of making a shortcut.
On VATSIM the use of visual approaches is encouraged at Copenhagen Kastrup when traffic and pilot knowledge permits.

If the weather permits ask the pilot, if he would like a visual approach. Do this as early as possible and note it on the Scratch Pad of the aircraft. Remember, that the pilot has to accept a VIS APP, you can't instruct the pilot to perform a visual approach - only approve it. However you could tell the pilot about the weather conditions and ask if he would like the ILS or the visual approach. Also note that he continues under IFR rules until he calls field in sight.

Please note, that visual approaches not are permitted between 2200 and 0700 (Local) if single runway operations are in use, i.e. takeoffs and landings are from the same runway.

Some of the pilots that know the airspace around Copenhagen like their own back-pocket can some times call field in sight 20-30 miles from the airport. Even though they can't see the runway it self, they know exactly where they are and how to get to the runway. In this case inform about other traffic in the sector and clear them for the visual approach.

4.4.4.5 STANDARD PROCEDURE APPROACH

This approach type is rarely used. However if you have an aircraft with radio failure it shall follow the standard procedure approach.
The aircraft will overfly KAS VOR and proceed outbound on a runway specific radial before commencing the turn to final. The procedure can be found on the IALPcharts.

4.4.4.6 MISSED APPROACH

Missed approach procedures are published on the IAP charts. Missed approach can be initiated by both the pilot and the ATC. If an aircraft is going around it should be handed over to approach as soon as possible.
In case of a sector split on approach the aircraft should be handed over to the approach sector into which the missed approach procedure turns the aircraft – also if departure is online.
As an example is runway 22L is active, the aircraft going around should be handed over to the east approach sector.

There are no published holdings for aircrafts on missed approach. They will proceed on the heading issued on the chart for vectoring by the controller.

The missed approach procedures are as follows:

Table 27 – Missed approach procedures at Copenhagen

Runway	First	Then	Pilot communication	ATC handover to
22L	Climb on RWY HDG to 500 ft or DME OXS 1.0 whichever latest.	Turn HDG 188 climb 3000 ft	Inform ATC for vectors	APP East
04L	Climb on RWY HDG to 500 ft	Turn HDG 348 climb 3000 ft	Inform ATC for vectors	APP West
22R	Climb on strait ahead to 3000 ft.	NIL	Inform ATC for vectors	APP East
04R	Climb on strait ahead to 3000 ft.	NIL	Inform ATC for vectors	APP East
12	Climb on strait ahead to 3000 ft.	NIL	Inform ATC for vectors	APP East (South)
30	Climb on strait ahead to 3000 ft.	NIL	Inform ATC for vectors	APP East (South)

4.4.5 TAXI ROUTES FOR ARRIVING AIRCRAFTS

Taxi procedures in general is covered in section 4.2.2. This section only focuses on arriving aircrafts.
Appendix J provides you with a list of proposed taxi routes when runway 04 or 22 is active.

On the charts for Kastrup there are issued 3 hold-points for arriving aircrafts. These are:

- Runway 22L: on B5 before joining B
- Runway 22L: on B before crossing C
- Runway 04L: on A before passing C

These points are associated with the tower positions being split in to 3 positions in real life, a set up we do not use on VATSIM. However be advised that some pilots might hold here, and call for further taxi-instructions. For an overview of the Tower area of responsibility refer to section 4.6.4.

After landing the aircraft should be instructed to taxi towards the apron, and handed over to Ground after the aircraft has crossed/vacated runway 12/30. The Tower position should only issue taxi clearance to the Apron North area. Gate assignment is handled by the Ground position (If no Ground position is online then of course both are handled by Tower in a single taxi instruction).

The runway layout in Kastrup results in the two parallel runways being used 95% of the time.

There are two main routes to and from the runways; TWY A and TWY B. One is used for departing and one for arriving traffic, depending on the active runway. On Apron North there are two perimeter-taxiways TWY Y and TWY Z. TWY Z is used for departing traffic and TWY Y for arriving traffic.

Runway 30 can be used for arriving traffic going to the domestic terminal. However don't use the runway in the other direction (From domestic terminal to active runway), as the pilot might miss the exit and cause a runway intrusion at runway 22L!
One exception from this rule is traffic to the Eastern apron (normally cargo traffic). This traffic should use RWY 12/30 and cross Runway 04R/22L instead of taxing via the passenger apron (TWY V/W).

All runways (Including RWY 12/30 when not active) are controlled by the Tower. So handover from Tower to must take place between TWY Z and RWY 12/30. It's very tight, so ask the pilot to call Ground using "callsign only".

4.4.5.1 TAXI WHEN RWY 22 ACTIVE

With 22L active for landing aircraft vacates to the right and taxies via TWY B to the Apron North area. This is the main rule of thumb: Landing aircrafts are taken via B to the apron.
If the pilot is slow on the brakes and vacates via B4, B3, B2 or B1 taxiway C and D can be used as a short cut if the aircraft needs to park in that area of the terminal. But normally the aircrafts follow TWY B all the way to Apron North.
If the pilot is hard enough on the brakes he can vacate via RWY 30. This should be approved by the ATC unless of course RWY 12-30 is somehow active.
Domestic traffic can with preference use Runway 30 for taxi to the stands. This must be coordinated with "TWR DEP".

4.4.5.2 TAXI WHEN RWY 04 ACTIVE

With 04L as active for landing aircraft should vacate via TWY A and taxi on TWY A to Apron North area. This way the arriving traffic flow is isolated from the departing traffic.
Very large aircrafts like B773, A346 (But not A343) however should vacate via E1 and continue on B due to limitations of the taxiways on TWY A. Note that it might be necessary to hold back traffic in the opposite direction on TWY B.
If an aircraft lands on 04R the controller should - prior to landing - instruct the pilot to either hold short (eg. of B) after vacating or tell the pilot about which taxiways that should be used for vacating (preferably TWY C or RWY 30). Otherwise the arriving aircraft might conflict with the departing aircrafts. One way could be to approve a long landing to insure the aircraft doesn't vacate too early. If the aircraft has vacated on a TWY B turn off, the pilot must hold short until there can be made a hole in the traffic flow so he can pass. As soon as possible get him away from the general flow of traffic on Taxiway B.

4.4.5.3 TAXI WHEN RWY 12 ACTIVE

When runway 12 is active the aircrafts can vacate directly onto the Apron North area. However after vacating the pilot should hold before being handed over to the ground position (if online). If the aircraft crosses RWY 04R/22L it will have to taxi via TWY G. On the chart some of the taxiways here are closed. And to make matters more complicated the charts and the different sceneries doesn't match on the G-taxiways. So just make sure that the aircraft find it's way to TWY V2 and take it from there.
If there is no other traffic inbound for arrival you can also instruct the aircraft to backtrack on RWY 12 and then vacate directly onto the apron area. This might be

easier for pilots not familiar with Kastrup airport, and thereby saving you for some work as well. However this is not standard operating procedure in real life.

4.4.5.4 TAXI WHEN RWY 30 ACTIVE

If runway 30 is active the aircrafts can vacate directly onto the Apron North area. However after vacating the pilot should hold short of TWY Z before being handed over to the ground position (if online).

If the aircrafts assigned gate is in the western part of the airport (Domestic or A-stands) and if traffic permits (no other aircrafts on the final) the aircraft can be approved long landing and asked to vacate via a specific taxiway if possible.

4.5 OTHER TYPES OF TRAFFIC

4.5.1 VFR TRAFFIC

VFR flight will under normal circumstances obtain VFR clearance from the Tower position. However the taxi clearance should of course be issued by Ground if the aircraft is parked on the apron.

VFR routes have been established in the control zone to the north and west. VFR pilots should use them whenever possible.

Inbound VFR flights shall stay below Copenhagen Area sectors, and shall Contact Copenhagen TWR well before entering Copenhagen Control Zone.

Outbound VFR flights shall be told to report when leaving the control zone.

4.5.2 HELICOPTER TRAFFIC

According to the official rules the airport is closed for helicopter traffic between 2400-0700. However on VATSIM we allow for helicopter traffic at all times of the day.

Helicopters should arrive and depart at/from the threshold of runway 22L or runway 30.

From the threshold used and within a distance of 1 NM from the coastline (no matter if runway 22L or 30 is used):
Arriving traffic shall plan to arrive, so that the flight follow a track between 208° and 308°.
Departing traffic should proceed on a track between 028° and 128°

VFR approaches and departures respectively, shall normally be cleared via HOLDING EAST, VFR-route 2 or VFR-route 3.
Departure, made IFR, shall be cleared in runway direction of RWY 04 or RWY 12.

Take-off and landing from the apron is not allowed.
Helicopters should taxi (or hoover taxi) to the active runway.
Two stands have been designated for helicopter-traffic: G110 and G111.

4.6 ATS POSITIONS AT EKCH

The following section covers the controller positions at Kastrup airport, their responsibilities and how to split them. When a position can be split, the positions are discussed as split in this section.

4.6.1 ATIS

Table 28 – ATIS frequencies at Copenhagen

ID		Freq	Callsign	Remark
Primary	EKCH_ATIS	122.750	Kastrup ATIS	

Kastrup has two separate automated ATIS frequencies, broadcasting Departure or Arrival information. On VATSIM however we only use one frequency at this moment.

The ATIS in Kastrup is structured as follows:

1. Airport identification and code-letter
2. Observation time
3. Approach procedure for IFR traffic
4. Runway in use
5. Surface-condition (if any info)
6. Holding-info (if any)
7. Transitionlevel
8. Navigation and landingaid condition or work in progess if any (from NOTAMs)
9. Start-up restrictions
10. Current weather (from METAR, decoded in plain language. by the way CAVOK is pronounced CAV-okay)
11. Airport identification and code-letter

So for example it would sound like this:

This is Kastrup airport information BRAVO at time 1820z
IFR flights expect ILS approach
Runway in use for landing 22L, runway in use for take-off 22R
Runway 22L and runway 22R covered 50% by 2mm dry snow and frozen ruts or ridges
Expect 10 mins. holding
Transition level 55
Taxiway A3 closed due to work in progress
Wind 260 degrees 15 knots, visibility more than 10 km in light showers of rain. (RVR-info if any here)
sky conditions Few 2500 feet, temperature 11 dewpoint 03 QNH 1012
This was Kastrup airport information BRAVO

4.6.2 DEL

Table 29 – Clearance Delivery frequencies at Copenhagen

	ID	Freq	Callsign	Remark
Primary	EKCH_DEL	119.900	Kastrup Tower	

Clearance delivery (DEL) does not control aircraft movements. DEL issues clearances to aircrafts after their filing of a flight plan.
The DEL controller needs to coordinate with TWR which runway and SID procedures are in use, and issue the clearances accordingly. If an aircraft is not able to follow a SID a remark shall be made in the data tag/scratchpad so it will be visible to other ATC's.

4.6.2.1 COORDINATION AND HANDOVER

Remember to enter the issued initial climb in the aircrafts tag (F8 using ASRC/VRC/ES). Use the scratchpad to make other controllers aware of special conditions using this system:

- For aircrafts on a normal FMS/RNAV SID the scratchpad should be left blank by EKCH_DEL
- For aircrafts on non RVSIM/SID departure the aircraft should be cleared via vectors and DEL should write **VECT** in the scratchpad.
- For VFR departures insert **VFR** to the scratchpad.

When the pilot has read back the clearance correctly the aircraft is told to contact Ground who issue push back clearance after request from the aircraft. In Euroscope you should change the status to Clearance given, and also verify that the RWY and SID predictions that ES have made are correct, and if not update these accordingly. This information can be seen by fellow controllers down the line.
The handover is done by pushing the flightstrip to the ground controller and by informing the pilot to contact Ground when ready for pushback.

4.6.3 GND

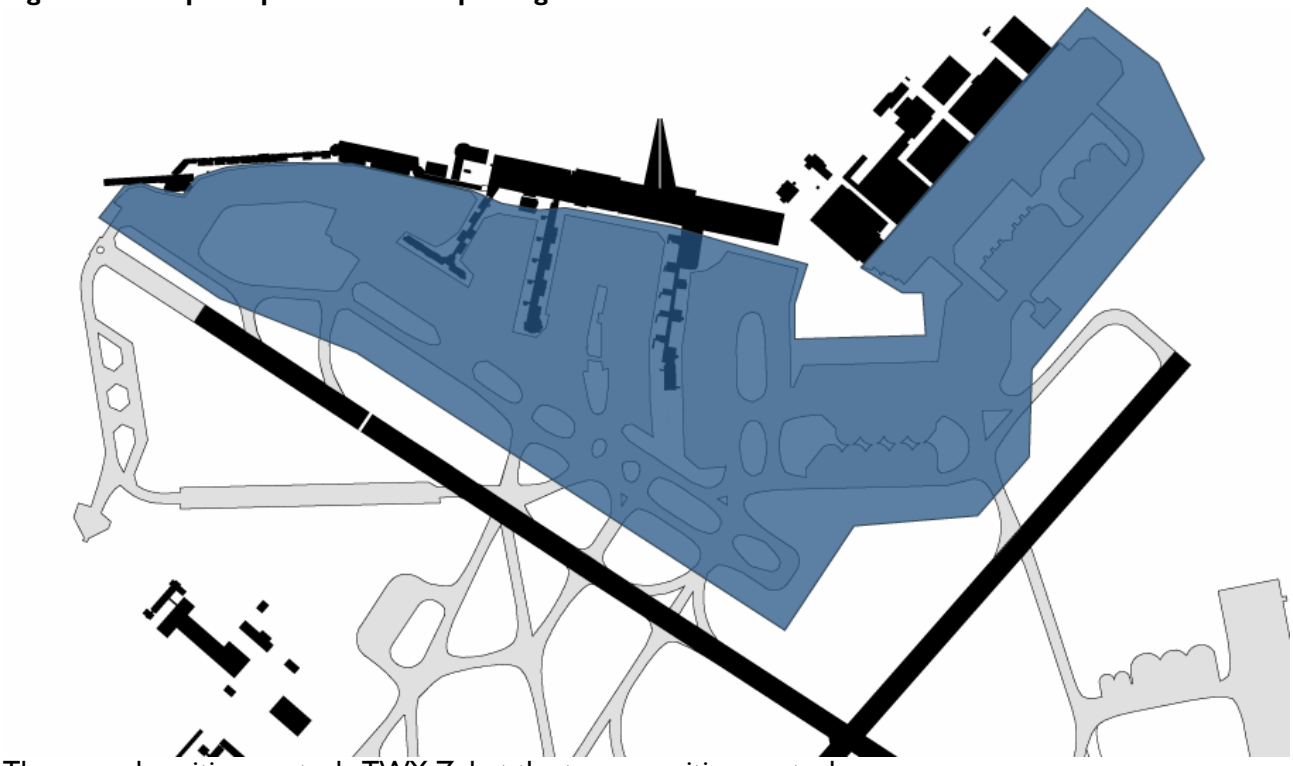
Table 30 – Ground frequencies at Copenhagen

	ID	Freq	Callsign	Remark
Primary	EKCH_GND	121.900	Kastrup Ground	
Split	EKCH_T_GND	121.900	Kastrup Ground	Taxi
Split	EKCH_P_GND	121.620	Kastrup Ground	Push Back

Ground shall provide push back and taxi clearance for departing aircrafts and provide taxi clearances to the gate for arriving aircrafts.
The Ground position controls aircraft movements on the Apron North (Terminal area). All aircrafts on runway areas (Including RWY12/30) and other aprons are controlled by the Tower.

Figure 20 shows the area controlled by the Ground controller. Note that neither the eastern apron or the parkingarea on TWY F is controlled by Ground.

Figure 20 – Map of Apron area at Copenhagen



The ground position controls TWY Z, but the tower position controls runway 12/30.

HINT: In situations with a lot of traffic is can be a good idea to have a sheet with the typical taxi route between the gates and active runway. See Appendix J.

4.6.3.1 DEPARTING TRAFFIC

Departing aircrafts will call GND after they have received clearance from DEL. They should be given push back clearance, and when ready be given taxi clearance toward the active runway. If you use Euroscope, remember to update the status of the flight to Push, and subsequently Taxi.

As the tower controller controls the runway 12/30 but ground controls TWY Z, the pilot has to be handed over to a tower controller to get permission to cross runway 12/30. This means the aircraft in the taxi clearance has to hold short runway 12/30 by ground.
Furthermore the taxi clearance provided by ground should not include information on which TWY / Holding point to use for line up.
If possible hand the aircraft over to the tower controller in good time before it reaches runway 12/30 so the pilots can continue taxing and crossing runway 12/30 without having to perform a stop-and-go.

4.6.3.2 ARRIVING TRAFFIC

Arriving traffic will be handed over to the Ground Controller from the Tower controller, after crossing RWY 30. These aircrafts will hold short of TWY Z (or

TWY K). The Ground controller shall assign the gate and a taxi clearance to the gate.

4.6.3.3 A NOTE ON START UP

It's a common misunderstanding on the VATSIM network that the phrase "Start-up approved" reefers to the actual start-up of the engines.
As controller we couldn't care less when the pilots spools up the engines as long as he's ready to taxi when pushed back.
The "start up" phrase tells the pilot, that the activation of his flightplan should be without delay.
If things were done by the book the start-up phrase would be unnecessary. If a delay can be expected this can be told to the pilot after the clearance has been read back.
So the ground controller only approves the push-back.
However as the use of start-up is widely misunderstood on VATSIM pilots might call and request engine start-up if they don't hear "Push and start approved". In that case just approve the engine start up and get the traffic flowing. No need to start at larger debate over that issue.

4.6.3.4 SPLIT POSITION

Should the level of traffic become so high that a split of ground position is necessary; the second position should only take care of push-backs. The primary ground frequency should handle taxi clearances.
The reason for not dividing the airport into two geographical areas (The obvious example is between Finger B and C) is that they would result in many handovers between the two ground frequencies. As the manoeuvre area is very small the aircraft would have to stop before contacting the new ground controller. These stop-and-go's not only confuse the pilot but also result in the taxiflow being interrupted. Therefore the handover is when the aircraft is parked anyway after handover. The push-back command should read "Pushback Stand B3 approved. After pushback contact Ground on 121.90 for taxi".
Dual ground position requires very close coordination between the controllers.

4.6.3.5 COORDINATION AND HANDOVER

Departing traffic should be handed over to Tower before reaching the hold-short position to prevent the aircraft has to stop and hold at the crossing runway.
The handover is done by pushing the flightstrip to the Tower position. The pilot is to be told to contact the tower for crossing.

Arriving traffic will be handed over from the tower by pushing the flightstrip.

4.6.4 TWR

Table 31 – Tower frequencies at Copenhagen

	ID	Freq	Callsign	Remark
Primary	EKCH_TWR	118.100	Kastrup Tower	
Split	EKCH_A_TWR	118.100	Kastrup Tower	Arriving 04/22
Split	EKCH_D_TWR	118.700	Kastrup Tower	Departing 04/22
Split	EKCH_T_TWR	118.575	Kastrup Tower	RWY 12/30

The TWR control zone stretches from sea level op to 3000 ft within the area shown on the map below together with the manoeuvre area on the ground:

Figure 21 – Tower areas in Copenahgen

On the ground the Tower position controls all runways and the taxiways leading to the runways as well as Apron East and Apron South.

It's the Tower-position that decides which runways to be used.

4.6.4.1 DEPARTING TRAFFIC

When the aircrafts have been handed over from Ground the Tower position first need to approve crossing the runway from the apron to the active runway.
This taxi clearance should include the taxiway to the active runway, including which taxiway to use for holding short. When 22R is active the trafficflow can be eased up by using the five taxiways A1, A2, A3, A4 and A5. If you are using Euroscope you should now set the status to departure.
It's the responsibility of the Departure Tower position to check that the departing aircraft is squawking mode C and that the assigned squawkcode is set. Tower may not depart aircrafts that doesn't squawk correctly.
Departing traffic may only be cleared for take-off at such time that they don't loose separation right after take-off. If a jet departs behind a slow prop there might be a need to hold the jet back a minute or two. Likewise a mix of aircraft

on different SIDs such that the departure path is split as soon after takeoff is preferable.
If an aircraft is departing from another runway than the current departure runway the Tower controller must coordinate this with the departure and possibly also the approach positions.

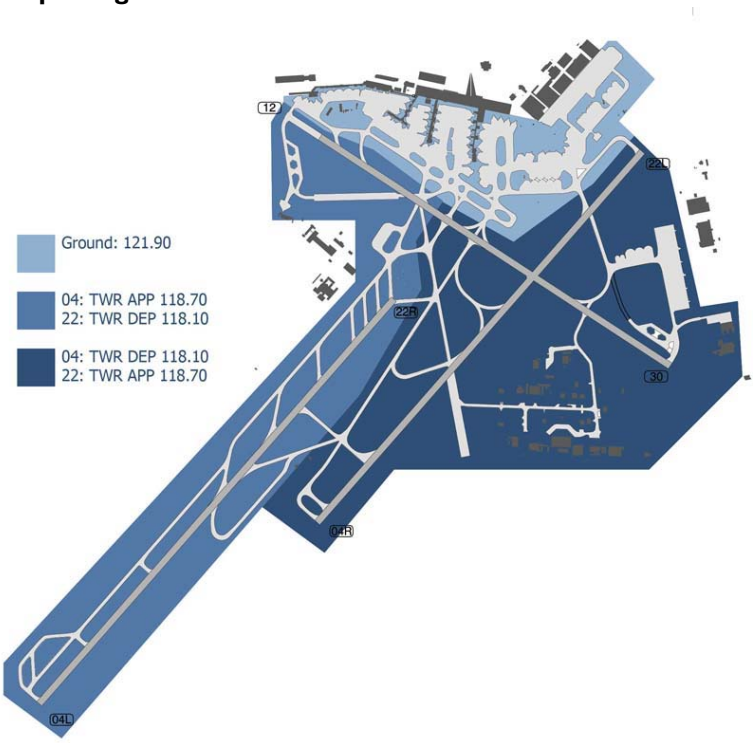
4.6.4.2 ARRIVING TRAFFIC

IFR arrivals will contact the tower controller when established on the final.
VFR arrivals will contact the tower controller at the VFR reporting points.
IFR visual arrivals will contact the tower controller at the point where approach has cleared him for visual approach and instructed him to contact TWR.
Tower should issue the landing clearance as soon as possible. If the pilot seems unfamiliar with Kastrup he should be informed to which side left/right he should vacate the runway.

4.6.4.3 TOWER SPLIT

The tower position can be split in two positions, which can be taken into use when runway 04 or 22 is active.
One tower position only handles the departing traffic and one position only the arriving traffic. So each ATC controls his own runway.

Figure 22 – Division between Tower and Ground at Copenhagen



For both arriving runways there are hold-short points, where the pilot should be handed over from the arriving Tower position to the 12/30 Tower controller. However many pilots will continue taxi beyond this point, so make sure to hand the aircraft over to "Tower 12/30" after the aircraft has vacated.

4.6.4.4 COORDINATION AND HANDOVER

Departing traffic should contact the departure controller by them selves when passing 1000 ft. If there is sufficient time this info could be repeated in the take-off clearance. Just in case the pilot missed the info.
If a departed aircraft calls after departure instruct him to contact Departure.
Handover is done by pushing the flightstrip.

Arriving traffic should be handed over to Ground when the aircraft has vacated the runways onto Apron North. The handover is done by pushing the flightstrip to the Ground controller.

4.6.4.5 TRAFFIC ON GROUND

The tower position controls runway 12/30 but the ground position controls taxiway Z & K. Arriving aircrafts must be handed over from tower to ground quickly after/when crossing RWY 12/30.
If the Tower positions are split the controllers needs to agree on use of taxiways. A good example is taxiway D which can be a shortcut by both arriving and departing aircrafts.

For more information on taxiing read section 4.2.2, 4.3.3 and 4.4.5.

4.6.5 APPROACH AND DEPARTURE

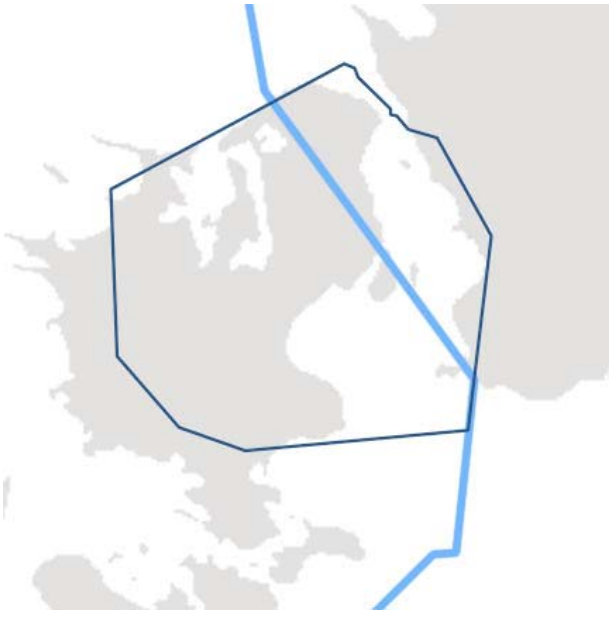
The approach/departure position can be split into 5 positions:

Table 32 – Approach and departure frequencies at Copenhagen

	ID	Freq	Callsign	Note
Primary	EKCH_APP	119.800	Copenhagen Approach	Primary freq.
Split	EKCH_W_APP	119.800	Copenhagen Approach	Sector west (12/30: South)
Split	EKCH_E_APP	118.450	Copenhagen Approach	Sector east (12/30: North)
Split	EKCH_F_APP	119.100	Kastrup Final	Final
Split	EKCH_DEP	120.450	Copenhagen Departure	When only 1 DEP online
Split	EKCH_W_DEP	120.450	Copenhagen Departure	Sector west (12/30 North)
Split	EKCH_E_DEP	124.970	Copenhagen Departure	Sector east (12/30: South)

Throughout this document we focus on the split used when runway 22 and 04 are active, as these are used 95 % of the time. When mentioning a sector the East-West split of Runway 22/04 will be used.
In case runway 12/30 is active the west sectors transforms to south and the east sector transforms to north. The frequency and VATSIM-ID (what you log on to the server with) still needs the _E_ or _W_ suffix.

Figure 23 – Copenhagen Approach area



The area covered by these is named Copenhagen Area, and under low traffic-density is just covered by one controller: Copenhagen Approach (Primary frequency). If Copenhagen Approach is mentioned in this manual without referring to a sector that's split, the whole area (with both arriving and departing traffic) is taken in to mind.

The Copenhagen Area covers an area that extends out of the Copenhagen FIR and into Swedish airspace, as described under the discussion of Copenhagen AOR. On the map to the right the EKDK border is marked in lightblue and the EKCH approach in dark Blue.

This result in traffic to/from the Copenhagen Area on the right side of the lightblue line

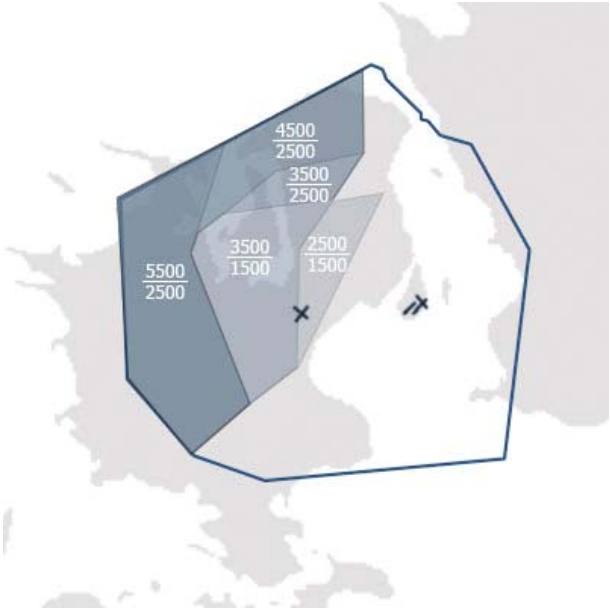
should be handed over to a Swedish Controller when the aircraft leaves Copenhagen area.

The roof of Copenhagen Area is FL195. The floor however is divided into different layers ranging from 1500 ft to FL65. This segregation has amongst others been made because Roskilde TMA lies underneath Copenhagen TMA, and to allow uncontrolled flights when a certain distance from Kastrup Airport. However as Roskilde TMA normally is delegated to Copenhagen Approach the approach position controls from 1500ft to FL195. This section however only covers the Copenhagen Approach Sectors unless otherwise noted.

4.6.5.1 ROSKILDE APPROACH

A small side note on Roskilde. Roskilde Airport has it's own approach sector. Below Copenhagen TMA sectors you find Roskilde TMA sector. The floor of the sector is 1500ft and it extends up to Copenhagen TMA sectors.

Figure 24 – Roskilde Approach



The map shows the floor and roof of Roskilde Approach. The Copenhagen Approach sector is marked by a red line. The white numbers show the top of Roskilde Approach. Note that around the airport itself (The Tower-area) the roof is only 1500. Above this the sector is the responsibility of Copenhagen Approach.

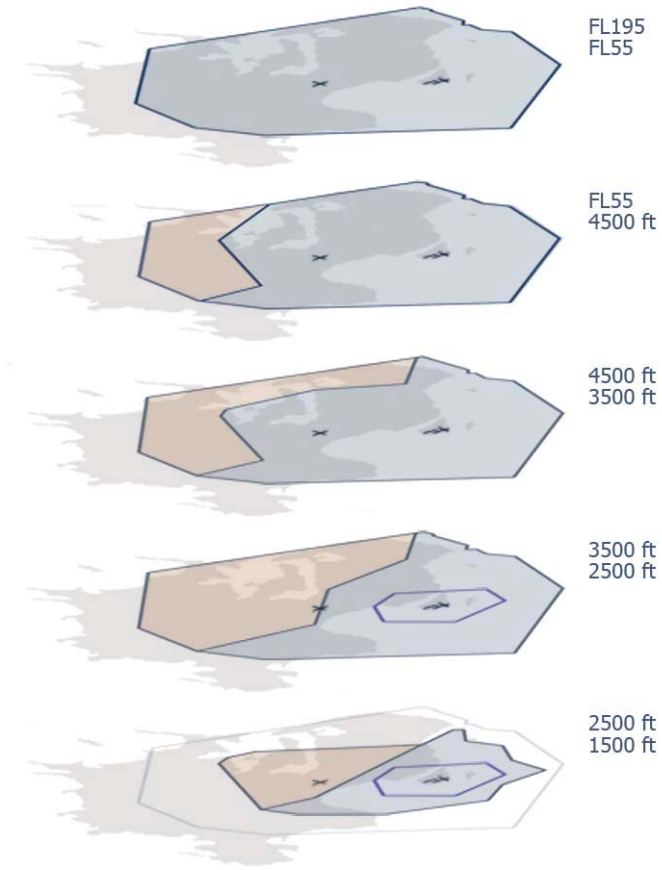
Roskilde approach extents out underneath the area covered by Copenhagen Approach. Here the roof still in 5500 ft.

Under normal circumstances Roskilde Approach on VATSIM this area is covered by Copenhagen Approach
In this case the Copenhagen Approach sector extends from 1500 ft – FL195. However you are encouraged to keep traffic to/from Kastrup above the Roskilde Approach sector, and Roskilde traffic within the Roskilde sector.

4.6.5.2 COPENHAGEN AND ROSKILDE COMBINED

The map below illustrates the area covered by Copenhagen approach and what area is covered by the Roskilde controller.
The polygon around Kastrup shows the control zone as managed by Kastrup Tower.

Figure 25 – Copenhagen Approach and Roskilde Approach



4.6.5.3 THE 5 SECTORS AT COPENHAGEN

In low density situations one approach position manages all approach sectors. The approach controller will then cover both arriving and departing aircrafts to and from Copenhagen Kastrup (EKCH) and Copenhagen Roskilde (EKRK). This section however only covers traffic to/from Copenhagen Kastrup.

As traffic builds up the approach sector can be split up. This is covered in section 4.6.5.7.

The approach position can be split in up to a total of 5 sectors:

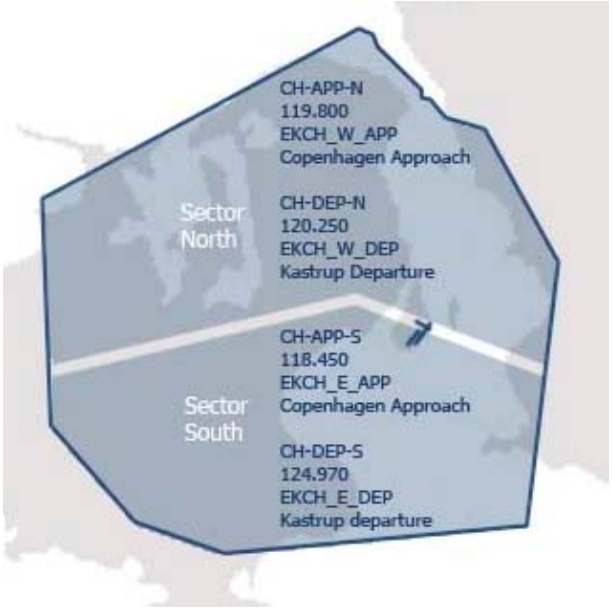
- 2 Approach positions (Approach West & Approach East)
- 2 Departure positions (Departure West & Departure East)
- 1 Final position (Final Approach) (Take traffic from downwind to final approach)

The geographical splits of the sectors depend on the active runways.
In general both the approach sectors and departure sectors are split in to two vertically divided sectors:

- East and west when runway 22 or 04 is active
- North and south when runway 12 or 30 is active.

Figure 26 – Copenhagen APP East & West

Figure 27 – Copenhagen APP North & South



When all 5 positions are active pairs of approach and departure controller covers the same area within Copenhagen Area, and have to coordinate their movements. The 5th position is the Final position (Not shown on the map). This position has a floating sector and lies below the approach and departure positions up to FL55.

The method for handling the traffic flow has been covered in section 4.4. This part will cover a presentation of each section and guidelines on how to split the sector from one controller up to the maximum of 5 controllers. In the appendix for this manual you can find the same maps for other runway configurations.

When the approach and/or departure position is split the control of SIDs and STARs is divided between the two sectors in the following way:

When runway 04 or 22 is active the split is in east / west sectors

Table 33 – Division between Copenhagen Approach East and West

	Arrivals	Departures
Sector East	ALMA, CODAN	ASTOR, KEMAX, BALOX, SIMEG, BISTA, MAXEL, TOBIS
Sector West	SVEDA, ROSBI, LUGAS	DOBEL, SORGA, MIRGO

When runway 12 is active the sector splits in north / south sectors.

Table 34 – Division between Copenhagen Approach North and South with RWY 12 active

	Arrivals	Departures
Sector North	ROSBI, SVEDA, ALMA	ASTOR, KEMAX, DOBEL, SORGA, MIRGO
Sector South	LUGAS, CODAN	SIMEG, BALOX, BISTA, MAXEL, TOBIS

When runway 30 is active the sector splits in north / south sectors.

Table 35 – Division between Copenhagen Approach North and South with RWY 30 active

	Arrivals	Departures
Sector North	ROSBI, SVEDA	ASTOR, KEMAX, DOBEL, SORGA, MIRGO
Sector South	LUGAS, CODAN, ALMA	SIMEG, BALOX, BISTA, MAXEL, TOBIS

Note that the ALMA arrival changes between north and south depending on whether runway 12 or 30 is active.

4.6.5.4 APPROACH

There are two approach positions (Approach West & Approach East). If only one approach position is staffed it's referred to as Approach (and should use the frequency of Approach West). Both have callsign "Copenhagen Approach".

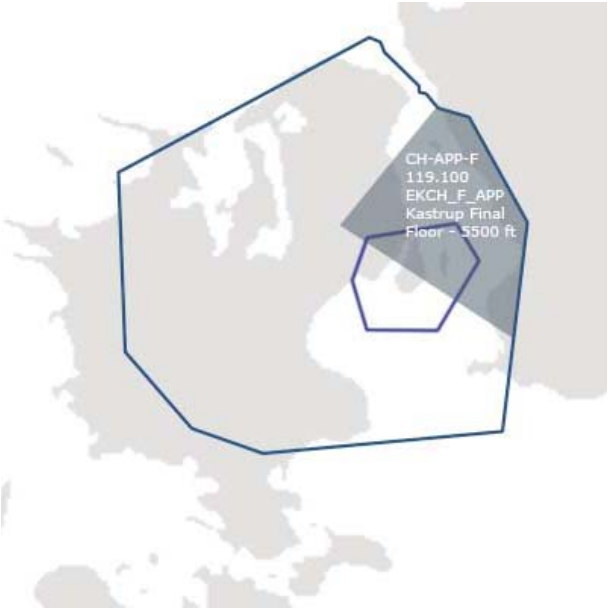
It's vital that the approach position coordinates with Final (if online) how and when the aircrafts should be handed over (FINAL decides).

More often than not APP and DEP positions will be combined, so even though the manual is broken into separate sections, these go hand in hand. When controlling the combined position you obviously know to what FL or Altitude both the Arriving and Departing aircraft have been cleared. If however you are only responsible for the Arriving traffic ensure these do not stay too high to long in order to avoid possible conflicts arising with the aircraft departing on one of the many SID's in EKCH.
Bear in mind that the Departing Traffic should cross above the Arriving traffic.

4.6.5.5 FINAL APPROACH

If the Final position isn't staffed this will be handled by Approach. In case two Approach positions are opened the controllers have to agree on, who covers the Final Approach function. This function can't be split between the two controllers! It could be considered to have on approach section and one Final section open (Approach + Final). Alternately either the west or the east sector should handle Final, and the position not handling Final should deliver his aircraft in the same way as he would should Final be online.

Figure 28 – Copenhagen Final Approach



The position as final is one of the most stressful available, as vectoring requires the most precision. The job is to merge two streams of aircrafts and line them up and properly space them on final approach. This is done with speed-restrictions, vertical separation and headings.

Aircrafts are vectored by the approach position to a downwind leg on both sides of the airport approximately 5 nm abeam of the runway (more or less like a standard traffic pattern). Handover to the controller of the Final on the downwind no later than abeam the opposite runway (i.e. if

Runway 22L in use, handover should be no later than abeam runway 12/30)
The map above shows the approximately area covered by final if runway 22 is active. The blue area around the airport is Copenhagen Control Zone.

Final Approach can be a quite busy place and instructions need to be given with a precision of a few sections! Therefore pilots should on initial contact only state callsign. This might be a good idea to put in the text-ATIS. It's also mentioned on the charts from SLV.

4.6.5.6 DEPARTURE POSITION

There are two departure positions (West and East). If only one departure position is staffed it is referred to as DEPARTURE (And should use the frequency of the West departure sector). Both positions have call sign "Copenhagen Departure".

When departure is online ATC controls the departing aircraft once airborne and until hand off to the ACC (Either approaching FL190 or the sector limits). The Departure Controller will instruct aircraft whether to follow the SID assigned by DEL or to follow radar vectors. The SIDs specify initial climb to 4000' or FL70. Departure should when traffic allow provide climb instructions to FL190 (only FL140 on ASTOR & BALOX departures) or the requested cruise level (whichever is lower).

The Departure Positions shares the same airspace both laterally and vertically as the Approach Positions and of course if both positions are online, then it is of vital importance that proper co-ordination exists between the two, to ensure safe separation between arriving and departing traffic. As APP anticipates departing traffic to follow SIDs and climb with minimum 400 ft per NM, and you MUST agree with APP prior to deviating from the SID, or if the aircraft is unable to follow the SID laterally or vertically. And this goes for each and every aircraft.

Remember that departing traffic as a general rule should cross above arriving traffic.

4.6.5.7 SPLITS

The split should always be made in a way that gives each controller a ballanced share of the workload. As an approach position is more demanding than a departure position, it can make more sense to split into two APP (Approach West + Approach East) positions rather than an APP and DEP position. Furthermore a split between arriving and departing traffic requires a larger coordination task than splitting the airspace into two.

When the approach position is split it's vital that there is a controller that turns *all* the aircrafts to the final. This job should be handled by one controller not two!

The first normal split of an approach position will be between Approach and Final. In section 4.6.5.5 you can read how to handle traffic in the final sector, and how the other approach sectors should hand over traffic.

Unless there is a really huge line of aircrafts about to depart, the second split should be considered to be a geographical split of the approach position.

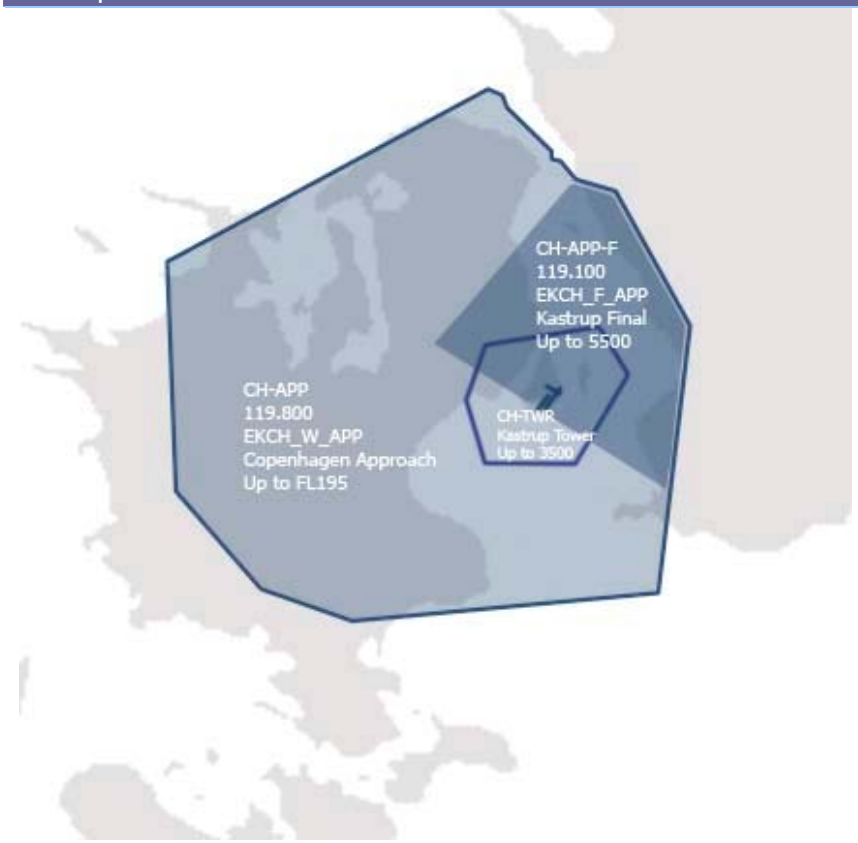
In this case the Approach airspace is divided into two areas - normally Approach West and East. Together with a Final Approach position this demands three controllers on Approach.

This is also the setup that is used in real life under normal traffic conditions.
The smart thing about this split is that the traffic is divided into different sectors. That way the east and west sector can focus on handling traffic rather than spending precious time on coordinating with each other. In this setup both sectors handle both arriving and departing traffic.

A split between arriving and departing aircrafts should normally only be considered an option as a third split (i.e. a total of 4 controllers on the APP positions) (=Approach West + Approach East + Final Approach + Departure).

Finally there is the 5-section split up with two approach sections, a final approach and two departure positions, which looks like this: Approach West + Approach East + Final Approach + Departure East + Departure West.
The five diagrams below shows the different set-up when runway 22 is in use. The setup for runways 04, 12 and 30 is shown in Appendix D.

Table 36 – Split of Copenhagen Approach sectors with runway 22 active

Description	Chart
	**Figure 29 – EKCH APP: 2 split** **2 controllers**: Approach + Final Approach Approach handles all arrivals and departures. Final handles traffic from downwind to final.
	**Figure 30 – EKCH APP: 2 split (alternate)** **2 controllers**: Approach East + Approach West The airspace is divided into two areas. Each controller handles departures and arrivals. In this case Approach East takes all traffic from downwind to final. Approach West must merge arrivals on a right hand downwind as in high density situations.

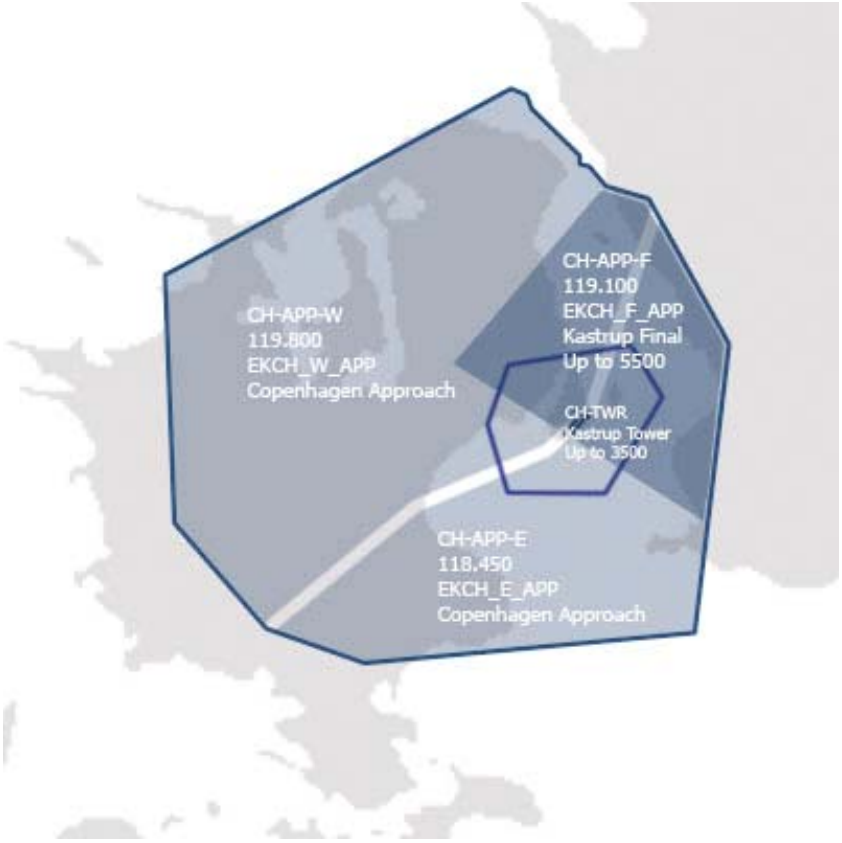


Figure 31 – EKCH APP: 3 split

3 controllers:
Approach East + Approach West + Final Approach

The airspace is divided into two areas. Each controller handles departures and arrivals.

Final Appraoch handles traffic from downwind to final.

Figure 32 – EKCH APP: 3 split (alternate)

3 controllers:
Approach + Final Approach + Departure

Approach handles all arrivals. These are handed over to Final Approach.

Departure handles all departures.

Final Approach handles traffic from downwind to final.

This set-up should only be used in situations with many departures and a small number of arrivals.

Figure 33 – EKCH APP: 4 split

4 controllers:
Approach East + Approach West + Final Approach + Departure

For arriving traffic the airspace is divided into two areas. Each controller handles arrivals only. These are handed over to Final Approach.

All departures are handled by Departure.

Final Approach handles traffic from downwind to final.

This set-up is normal for fly-ins as the departure position isn't as demanding as the APP positions.

Figure 34 – EKCH APP: 5 split

5 controllers:
Approach East + Approach West + Final Approach + Departure East + Departure West

For arriving traffic the airspace is divided into two areas. Each controller handles arrivals only. These are handed over to Final Approach.

For departing traffic the airspace is divided into two areas. Each controller handles arrivals only.

This set-up should be used in heavy density situations with an extreme number of departures.

4.6.5.8 NO TOWER ONLINE

In the rare case, that the approach area is split but there is no coverage of the Tower position in Copenhagen Kastrup, this position is covered by the controllers above in the following prioritised order:

1. Departure East (EKCH_E_DEP)
2. Departure (EKCH_DEP)
3. Approach East (EKCH_E_APP)
4. Approach (EKCH_APP)

4.6.5.9 COORDINATION AND HANDOVERS

In order to increase the information level of your fellow controllers you should use the coordination tools the various ATC applications provide to you. Euroscope has many such tools that will help other ATC, if used properly and consistently.

Coordination between departure controller and tower.
Make sure to establish some guidelines as to when tower may release aircrafts (clear them for takeoff). Otherwise the controller managing the departing traffic needs to approve every departure prior to takeoff, which can turn quite demanding.

Aircrafts will be handed over from the Tower by a pushed flightstrip. Note that Tower doesn't track the aircraft so there will be no handover, only a pushed flightstrip. You need to remember to start the tracking manually.

Coordination between departure controller and ACC.
The departure controller remains in control of the aircraft until the border of the airspace which is either either FL190 or the lateral borders of the airspace. Aircrafts at FL190 within Copenhagen Area airspace should maintain FL190 and contact ACC for higher.
You should initiate handoff 2000-3000 ft prior to the boundary of your sector.

Coordination between ACC and approach controller.
The aircrafts are cleared inbound on a STAR by ACC. ACC is told the STARs by Tower. If things starts to heat up in the approach sector, then make sure that ACC starts putting aircrafts into the published holdings (when so required by APP).
Handoff to APP should be from the bottom of the stack, such that APP can release at his convenience.
Agree on a minimum descent level in the stack. APP should have say 3000 ft at his disposal, and ACC the levels above. Remember that flights plan their descent to pass the Holding point around FL100, so most of your flights will (unless restricted in their descent arrive at this level).

Coordination between arrival controller and final approach.
The final approach controller needs to joint 2 streams of aircrafts on to one runway. This can be a very stressfull situation. Therefore the approach controller needs to keep an eye out for the situation in the final approach sector. If things get cramped then keep the aircrafts back to create some working-space for the final position, when so requested. In reasonable meterological conditions and experienced controllers maintain the minimum spacing of 2.5-3.0 nm, one aircraft can land each minute. With more or less equal amounts of traffic arriving from

Approach West and Approach East this means that you should hand off one aircraft every 2 minutes.

When instructing the pilot to contract Final Approach tell the pilot to report with "call sign only". The Final Approach can be a very busy channel, with turns needing to be transmitted with a precision of few seconds, so radio chatter needs to be kept to a minimum.

The aircraft should normally be handed over to final no later that when passing the airport on the downwind-leg. At this point the aircraft should normally be approaching 5000 ft.

If the pilot request a visual approach and weather permits or you wish to expedite traffic the approach controllers may agree to accept visual approaches. From the controllers point of view, the work burden is reduced, as the pilot becomes responsible for navigating to landing, and maintaining separation to other aircraft. ATC is still responsible for keeping other aircraft on IFR at sufficient IFR separation from VFR/Visual aircraft.
This needs to be coordinated with both the Tower (Arriving) and Final Approach (if online). At heavy traffic situations it might prove a challenge to squeeze in a visual approach. But if possible – and approved by Tower (and Final) then insert **VIS** in the scratchpad.

Coordination between Final approach and Tower.
Once the pilot reports established on final the aircraft should shortly hereafter be told to contact tower.
Prior to doing so it is important that you have transmitted any instructions to the pilot related to maintain separation (eg. maintaining a minimum speed until 4-5 nm final).

The handover to TWR is done by pushing the flightstrip, and droping the target. Tower doesn't track the aircraft.

5 EKBI

Will be added in later versions

6 EKYT

Will be added in later versions

7 EKAH

Will be added in later versions

APPENDIX A: THE SECTORFILE (.SCT)

In the process of preparing this manual and the Euroscope file it has been decided to give the sectorfile a general overhaul. This means that we have reorganized a number of items and we have added others.

The sectorfile should still be usable for ASRC / VRC and at the same time be compatible with the .ESE file of Euroscope.

In the following is a description of the items included under each heading:

[ARTCC]

- DK_AOR The Area of Responsibility of Denmark
- F FIR information from the surrounding countries (SE, NO, DE, GB)

[ARTCC LOW]

- Traffic Information - TIA
  EKEB
- Control zones - CTR
  EKRN
  EKAH
  EKYT
  EKSP
  EKKA
  EKRK
- Terminal Areas - TMA
  EKBI
  EKYT
  EKAH
  EKKA
  EKSP
  EKCH
  EKRK
- Final Approach Areas - FIN
  EKCH 04, 12 22, 30 respectively
- Approach Areas - ATS
  EKBI
  EKYT
  EKKA
  EKSP
  EKAH
- Lower Level Area Control Sector lines (GND-FL245)
  DK_L
- Medium Level Area Control Sector lines (FL245-FL285)
  DK_M

[ARTCC HIGH]

- Upper Level Area Control Sector lines (FL245-FL285)
  - DK_U
  - Norwegian Upper
  - Swedish Upper

[SIDS]

- SIDs for
  - EKCH
  - EKBI
  - EKEB (Heli)

[STARS]

- STARs for
  - EKCH
  - EKBI
  - EKRK
- Extended Centrelines (for ASRC/VRC)
  - Eastbound
  - Westbound
- Danger Areas
- Restricted Areas
- Holdings

APPENDIX B: CONTROLLING WITH EUROSCOPE 3.0

APPLICATION OVERVIEW

Starting with Euroscope can be a very steep learning curve. This is due to the less intuitive layout of the Application. What you will find after getting used to the application is however that it provides you with a tidy interface, with a lot of supporting tools which will make your task of controlling much more effective. What sets it apart? Well here are a couple of reasons why you should switch to Euroscope when you have come past basic ATC tutoring:
In addition to what other Applications (ASRC/VRC) below are a couple of points Eurocsope will provide you with:

- a visually updated display of what sectors you are responsible for
- a visually updated display of what aircraft you control
- information on which controller to hand off an aircraft to, and at what fix and level handoff shall occur
- Tags with information on assigned heading, speed, and level, visible to other Euroscope controllers
- Possibility to shift sectors between controllers in case of a need for a load redistribution
- Lists with information on incoming, exiting, departing and arriving aircraft
- Data picture already before you log on to VATSIM, such that you know the traffic and ATC information prior to logon. (just select your planed ATC position on the headset icon and you are good to go).
- Precise route predictions according to your easily updatable Airway database with ETA for each fix along the route
- Predictions on what STAR a given aircraft should follow.
- Multiple incidences of the application can run on the same computer or several computers on a LAN. The application will synchronize between them ensuring that consistent data is shown on all your incidences.
- Display setup files that are separated from the sector file pair (.sct/.ese files), such that you with the same sector file pair can save an unlimited number of Radar screen layouts.

USING THE MAXIMUM POWER OF EUROSCOPE

In the following the highlights of some of the powers of Euroscope will be presented, with particular focus on their implementation in Denmark

It is again extremely important that you understand that we with Euroscope now implement the more real differentiation between:

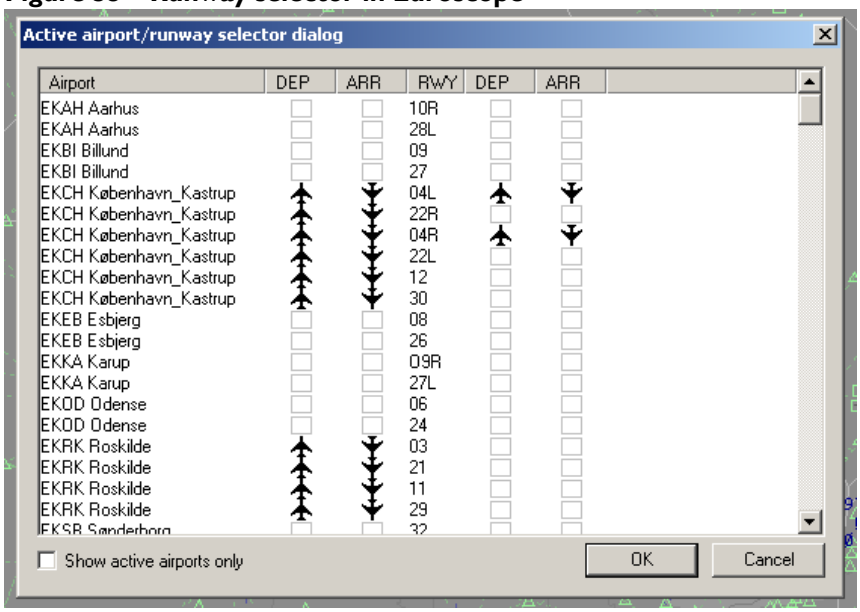
- A Controller position (EKDK_V_CTR)
- A Sector (DK_B_L)

ACTIVE RUNWAYS

It is important that you always update Euroscope with information on the active runway at the airports within your interest area. This may also be airports outside your area of responsibility (eg. EKCH when you are controlling EKDK ACC).

You have quick access through the Runway icon on the toptool bar. Here you have all airports listed with their respective runways.

Figure 35 – Runway selector in Euroscope



On the left side of the runway ID you control whether you should have Departure / Arrival information relating the given airport. On the right hand side of the Runway ID you should update the actual runway in use for DEP and ARR. This information is used by Euroscope for a number of things and you should therefore keep it upto date, when changes occur over a session. Amongst the things Euroscope uses it for are: SID, STAR prediction and Sector activation for runway dependant sectors.

Note the small checkbox at the left hand bottom. In the .ese file we have tried for each sector to identify what airports are of interst for the controllers of each sector. If you leave the checkbox unchecked, you will be provided with all airports known to Euroscope in the region. (This is based on the content of the [Runway] section of the .sct file). If you check the checkbox, and at the same time in the General Settings have checked the "*Set active APT by owned sectors*", then Euroscope will shorten the list to those we think are relevant to the sectors currently owned by you. You can at any time revert to the full list by unchecking this checkbox.

SECTOR OWNERSHIP

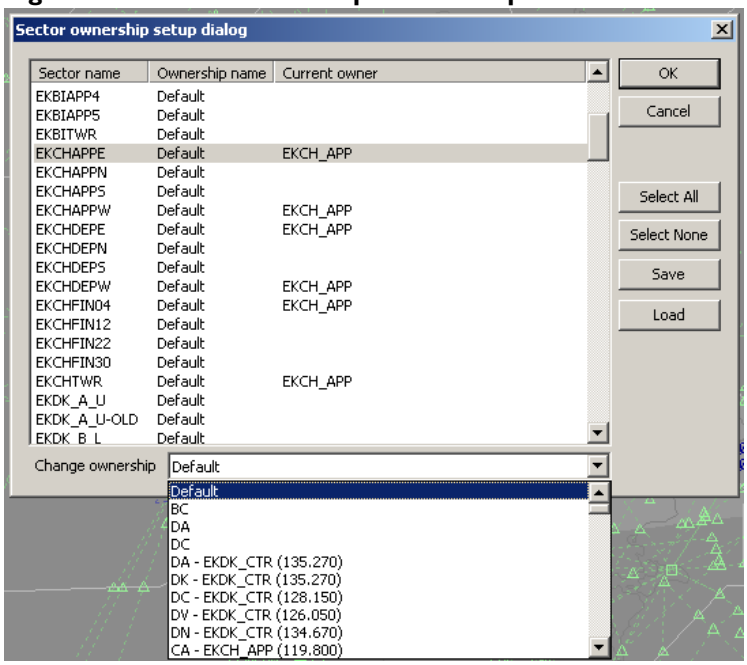
When you start working with Euroscope you will see that unlike previous VATSIM ATC applications it will visually provide you with information on what sectors you are responsible for, dependant of what other controllers are online. All this is controlled through your selection of Primary Frequency.

Should one of your fellow DK controllers come or leave, Euroscope will transfer the ownership of related sectors in between you - visually. In case the other guy comes online you still need to ask the pilots to contact him.

You will also through the color of the Aircraft Blip and its tag and the contents of the tag get a visual feedback on the on ownership of a given aircraft. This is very well described in the Euroscope manual, and you should make sure you have fully understood this part very well.

Sector ownership is typically assigned automatically, but the fantastic thing is that the program gives you the ability - on the fly - to transfer one sector from one controller to the other. This is managed under *Other settings->Sector ownership Setup Dialog*. I have below shown this window as it looks when I am logged on as EKCH_APP and with no other controllers online:

Figure 36 – Sector ownership in Euroscope



Note that I (EKCH_APP) show I have responsibility for the following sectors: EKCHDEPE, EKCHDEPW, EKCHAPPE, EKCHAPPW, EKCHFIN04, EKCHTWR. If you had scrolled down you would also had seen that, I also have the responsibility for the sectors of EKRKAPP.

A couple of other interesting things to note:

- The Application has given me control of EKCHFIN04, but not FIN12, FIN22, FIN30. Again this is based on the .ese file PLUS the information you have provided to the program in terms of active runway for landing.
- In the dialog box at the bottom you chould after agreeing with another controller shift the responsibility for a sector (Here EKCHAPPE) to another controller. Note that if this is done *ALL* other controllers (online, or coming online after you do this should make the same change - if not there will be a mismatch.

You should understand the contents of this dialog, and how to change the default assignment of a sector.

Here you can see at any given time how Euroscope has interpreted the online controllers, and which sectors are assigned to whom. As you can understand this becomes useless if not everybody works with the same .ese file here.

This is one of the reasons why it is very important not to change anything in the complex .ese file. All of this is controlled through this file.

ADDITIONAL DISPLAY ITEMS

EXTENDED CENTRELINES

Under "*Other Settings -> Display Settings*" you can for each runway configure what parts of extended centrelines you wish to be shown on your screen. The geometry and ticks of the extended centreline are controlled centrally for all runways through the "*Other Settings-> Extended Centreline Setup*" dialog. Note that here you can check a checkbox instructing the Application only to show Extended Centrelines for Runways you have ticked as active.

ATC SUPPORT TOOLS

As already mentioned Euroscope contains a number of tools to make your life as a controller easier. Some of these are mentioned below.

LISTS

Euroscope has a number of lists that will help you. Depending on what ATC position you are covering they will be of different use for you.
The lists are:

- Sector Inbound
- Sector Exit
- Departure
- Controller
- Aircraft
- Voice Room
- Metar

Some of these lists can be configured at your convenience. We have not done anything particular about reconfiguring lists from the default layout at the present stage

COORDINATION

Note this only works properly if the other controllers are also using Euroscope (which you can see on the controller list if the controller ID has a >> in front of their Short ID).
If you as a controller wants to coordinate a shortcut with an aircraft in your sector, or an aircraft in the sector prior to yours, you can coordinate this very simply. For details, please refer to the Euroscope manual.

AUTOMATIC VOICE ATIS

This part has currently under development and will be detailed in a coming revision.

SAVING OF SET UP

The setup of Euroscope is complex at first, and not well described in the Euroscope manual.
We have below tried to provide additional information.

Note that the saving of your settings is NOT automatic. For most you will be asked if you want to save at the time you exit the application, but for others you will not, and they may by default be either discarded or saved. Please refer to the Euroscope documentation for details on this subject.

Below is a short description of the various files used by Euroscope, and what goes where.

SECTOR FILE .SCT

A pure text format file.
It contains all the drawable items shown on the Radarscreen, except the sector definitions and the new option freetext which are in the .ese file. Note that as the sector definition from the .ese file cannot be selected for display permanently, the sector boundaries have been repeated in the .sct file.

Note that the content of the .sct file is not used for any calculations, as its consistency cannot be relied upon by the application. This means the contents only governs what is displayed on the Radar Scope.

EUROSCOPE SECTORFILE EXTENSION .ESE

Note: It is extremely important that you do not change the .ese file from the standard DK .ese file. The layout works optimally only if everyone has the same layout and definitions in here. It can surely be done in a lot of ways, but this is how we have found best for DK.

A pure text format containing the following information:

- Controller IDs (similar to the contents of the .pof file used in ASRC/VRC)
- Sector line definitions
- Freetext definitions
- Sector definitions

Note: that there is a direct pairing between the .sct file and the .ese file. The name of the two must be the same, and differ only in the extension.

EURSCOPE SECTORFILE ACTIVE RUNWAYS .RWY

The active runways as set up for the given sectorfile is saved in a text file with the same name as the .sct and .ese.

PROFILE FILE .PRF

A pure text format file containing the following information:

- Recent files

- Connection settings (**including your VATSIM password in real text**)

Do not share your profile files with anyone

SETTINGS FILE .TXT

A pure text format file containing the following information:

- General application settings including window and list layout
- Symbol Colors and linetypes
- Voice setup

You will typically only have one settings file for each type of position you control:

- ACC
- APP/DEP/FIN
- TWR
- GND

The Settings file is managed under the "*Other Settings*" Icon on the top toolbar.

EUROSCOPE DISPLAYFILE .ASR

A pure text format containing the following information:

- A listing of items from .sct file that have been turned on.

You may have as many .asr files as you want.

Note: An ASR file is related to a given .sct/.ese file, as all its display information is related to the content of these files.

The Display file is managed under the "*Open SCT*" icon on the top toolbar

ALIAS FILE .TXT

As with ASRC/VRC this contains keyboard shortcut commands.

Note: that the available functions in Euroscope are different and typically more advanced than

ICAO AIRLINES DATA FILE

This file contains information about airlines.

ICAO AIRPORTS DATA FILE

This file contains information about airports worldwide

ICAO AIRCRAFT DATA FILE

This file contains information on the aircraft types, that Euroscope will show you for the selected aircraft.

FS NAVIGATOR DATA FILE

This file contains all airways and intersections of the world. This data in this file is used for aircraft path predictions, and should be kept up to date.

DATMAS SETUP

The following information has been gathered from various sources.

RADAR LAYOUT

Screen size 2048x2048 pixels

Table 37 – Euroscope DATMAS set-up

		R	G	B	
Background	Inactive	92	86	87	
	Active	100	94	94	
SSR target		255	255	255	Round filled Ø11 pts
SSR trail		201	213	230	Round filled Ø6 pts
SSR leader		255	255	255	w: 1 pt
SSR leader		?	?	?	w: ? pt
SSR Radar Tag	No-concern	166	166	166	h: 11 pts, w: 8 pts Line Distance: 23 pts **Info** CH Area Standard: L1: Ident L2: Altitude
	Notified	255	255	255	**Info** CH Area Standard: L1: Ident, Weight Cat L2: Alt (3 digit), Spd (3 digit), Act Type (4 char) CH Area Detailed: L1: Ident, Weight Cat, Sector (2 char) L2: Alt (3 digit), Spd (3 digit), Act Type L3:
	Transfer activated				
	Assumed	184	155	71	
Sector Boundary		20	20	20	w: 1 pt
Fix	Symbol	128	127	124	size: 11 pt filled triangle
Apt	Symbol	128	127	124	size: 11 pt nonfilled circle 1 pt border
VOR	Symbol	128	127	124	As Fix
Airway		?	?	?	?
SID		?	?	?	?
STAR		?	?	?	?
Runway	Extended CL	112	139	168	w: 1 pt
	CL	112	139	168	w: 2-3 pt
Coastline		101	105	102	
Menu items	General Background	113	141	169	
	Title Font	0	0	0	
	Separator Background	175	175	175	
	Separator Font	54	54	54	
Info box	Frame	112	139	166	
	Title	255	255	255	
	Data	235	174	174	size: 11 pts Line distance: 23 pts
Own Sector name	Title	255	255	255	size: 24 pts
	Clock	255	255	255	HH, MM size: 24 pts SS size: 11 pts
Scroll bar	Background	172	145	145	
	Handle Frame 3D look, Top, Left	255	255	255	
	Handle Frame 3D look, Bottom, right	0	0	0	

APPENDIX C: EKDK CTR PLATES

This section covers suggestions on splitting the ACC position.
This isn't a final list on how you must split. The different sections can be merged in such a way it creates a set-up that meets the traffic demand.
But the examples below are the most common used splits.

For details on the vertical division of the sectors reefer to section 3.4.5.

1 CONTROLLER (LOW CAPACITY)

One controller covers all EKDK – including all airports (And Copenhagen Approach which extends in to Swedish airspace)

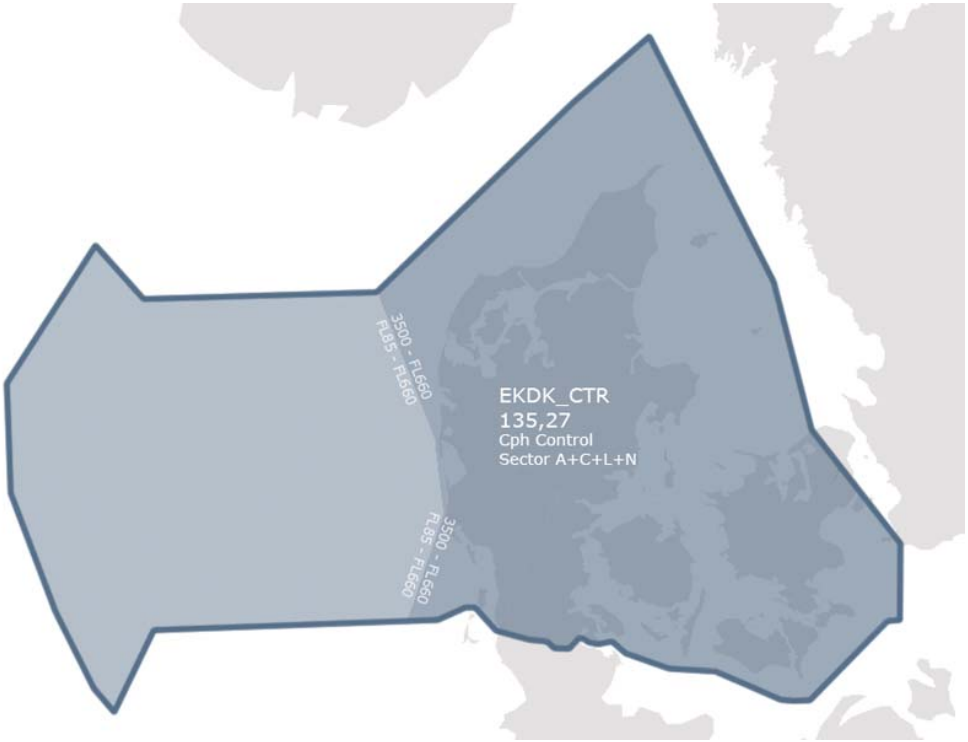


Table 38 – Copenhagen Control sectors

ACC position	Callsign	Freq	Short ID	Long ID	Note
EKDK_CTR	Copenhagen Control	135.270	DK	EKDK_CTR	Covers all EKDK

2 CONTROLLERS (MEDIUM CAPACITY)

A split between two controllers can be done in many ways. The two examples below are the most used.

SPLIT 1

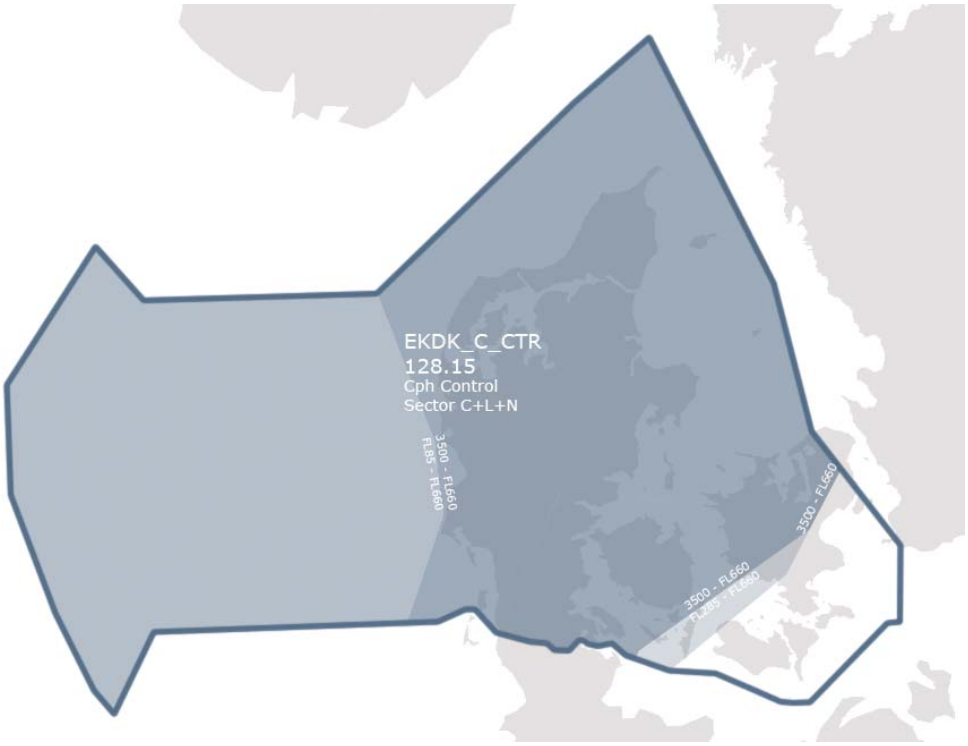
One of the controllers covers only sector A. The second controller covers the rest of EKDK.

Table 39 – Copenhagen Control sectors

ACC position	Callsign	Freq	Short ID	Long ID	Note
EKDK_A_CTR	Copenhagen Control	135.270	DA	EKDK_A_CTR	Sector A
EKDK_C_CTR	Copenhagen Control	128.150	DC	EKDK_C_CTR	Sector C+V+N

ATC 1 – SECTOR A

ATC 2 – SECTOR C+V+N



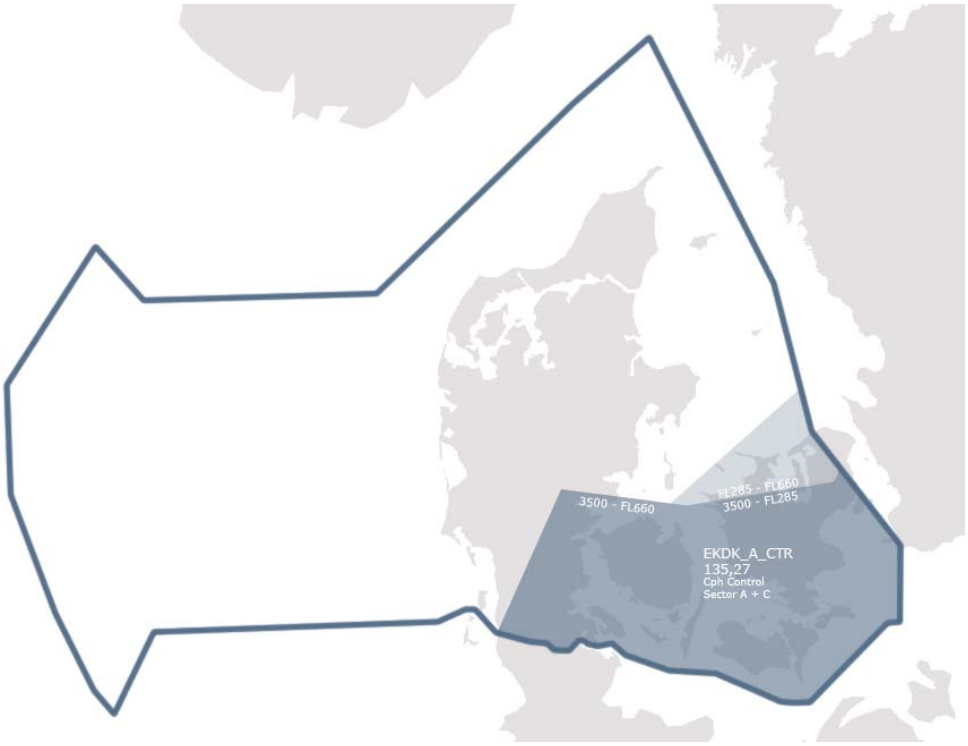
SPLIT 2 (ALTERNATIVE)

One of the controllers covers sector A + C. The second controller covers the rest of EKDK.
This split should only be used if either Copenhagen Approach is covered by an APP-controller, or there is limited traffic in Copenhagen as the ATC on sector A+C will be rather busy.

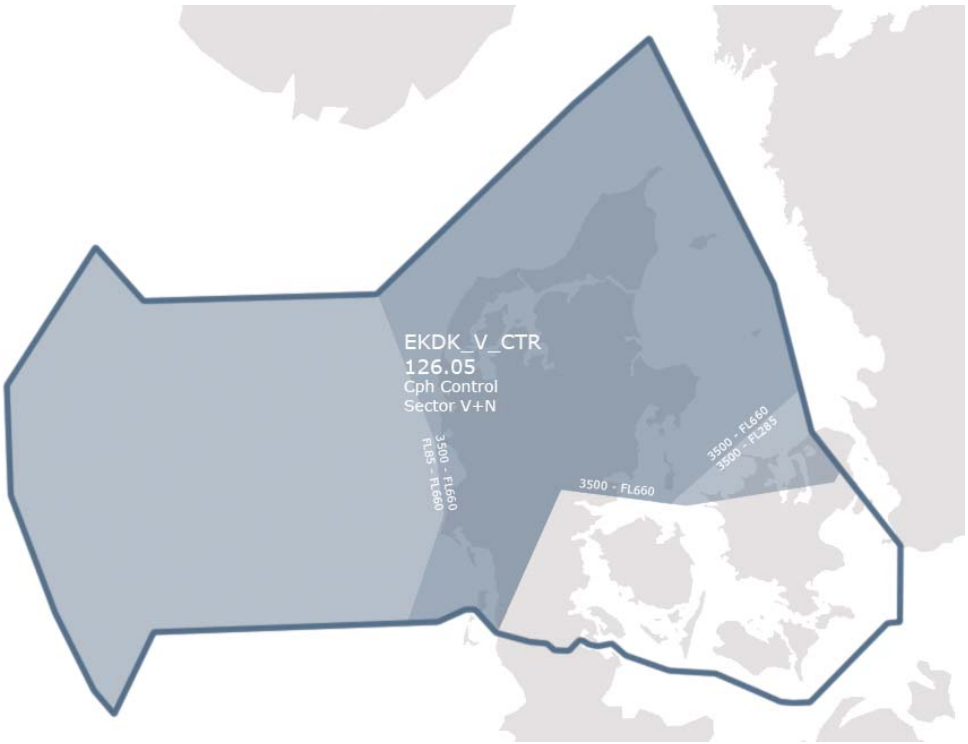
Table 40 – Copenhagen Control sectors

ACC position	Callsign	Freq	Short ID	Long ID	Note
EKDK_A_CTR	Copenhagen Control	135.270	DA	EKDK_A_CTR	Sector A+C
EKDK_V_CTR	Copenhagen Control	128.150	DV	EKDK_V_CTR	Sector V+N

ATC 1 – SECTOR A+C



ATC 2 – SECTOR V+N



3 CONTROLLERS (HIGH CAPACITY)

In case the traffic capacity needs to be high around Copenhagen the best way to split is with one controller covering sector A, one controller covering sector C and a third controller that covers the rest of EKDK.
This is normal split-procedure in EKDK for large events in Copenhagen.

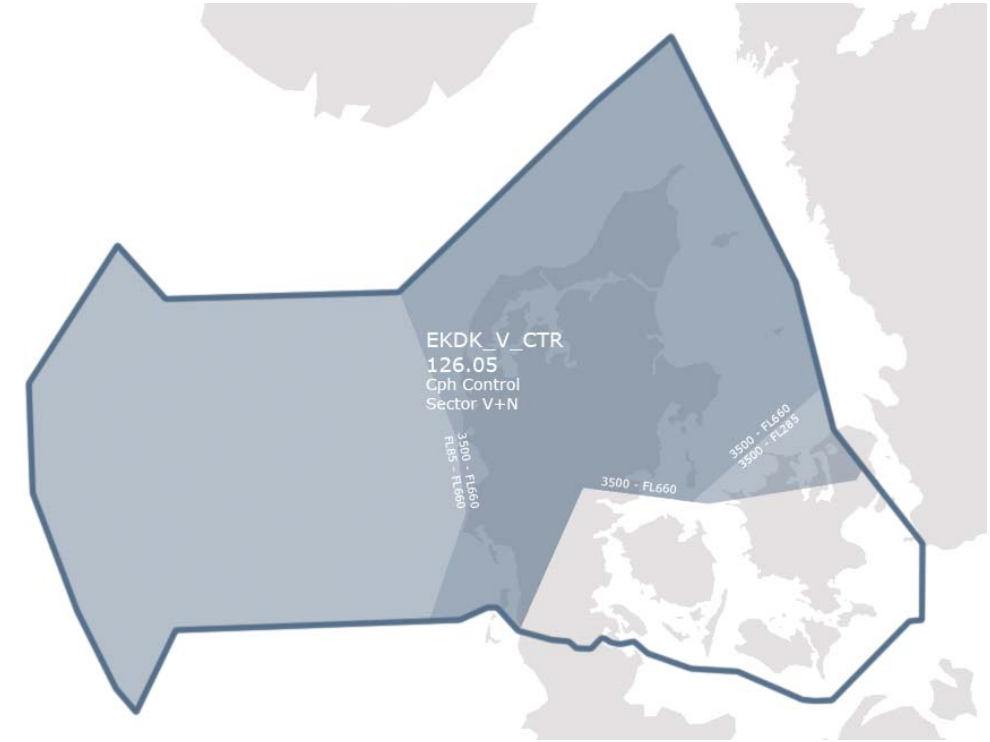
Table 41 – Copenhagen Control sectors

ACC position	Callsign	Freq	Short ID	Long ID	Note
EKDK_A_CTR	Copenhagen Control	135.270	DA	EKDK_A_CTR	
EKDK_C_CTR	Copenhagen Control	128.150	DC	EKDK_C_CTR	
EKDK_V_CTR	Copenhagen Control	126.050	DV	EKDK_V_CTR	

ATC 1 – SECTOR A

ATC 2 – SECTOR C

ATC 3 – SECTOR V+N



4 CONTROLLERS (EXTREME CAPACITY)

In case of extreme high traffic levels the ACC airspace can be split in to 4 sectors, handled by 4 individual controllers.
To this day this set up has never been used, as it creates a capacity higher than needed on VATSIM.

Each sector is described and shown graphically in section 3.4.5.

Table 42 – Copenhagen Control sectors

ACC position	Callsign	Freq	Short ID	Long ID	Note
EKDK_A_CTR	Copenhagen Control	135.270	DA	EKDK_A_CTR	Sector A
EKDK_C_CTR	Copenhagen Control	128.150	DC	EKDK_C_CTR	Sector C
EKDK_V_CTR	Copenhagen Control	126.050	DV	EKDK_V_CTR	Sector V
EKDK_N_CTR	Copenhagen Control	134.670	DN	EKDK_N_CTR	Sector N + S

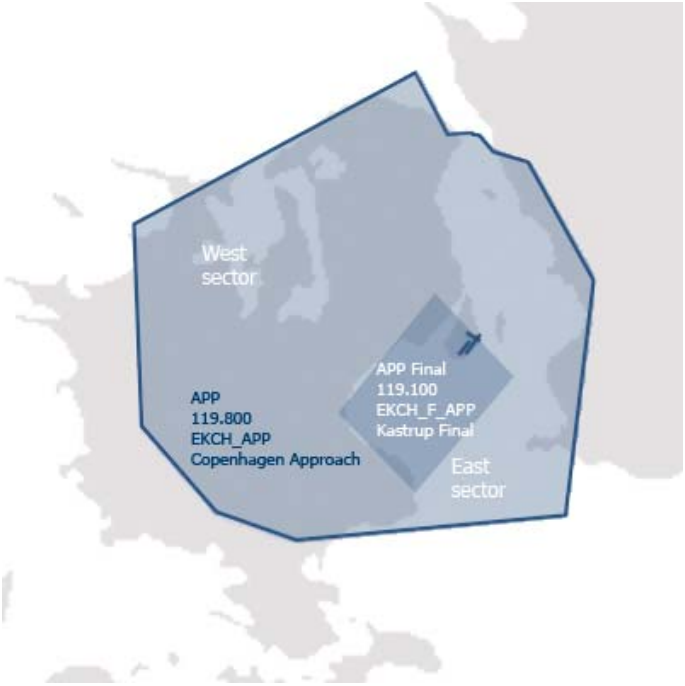
APPENDIX D: EKCH APP PLATES

This plates shows how to split the approach position between 2/3/4/5 controllers. The set-ups are as follows:

1. 1 approach controller + 1 final controller.
2. 2 approach controllers.
3. 1 approach + 1 departure controller.
4. 2 approach + 1 final controller.
5. 1 approach + 1 departure + 1 final controller.
6. 2 approach + 2 departure + 1 final controller.

RUNWAY 04

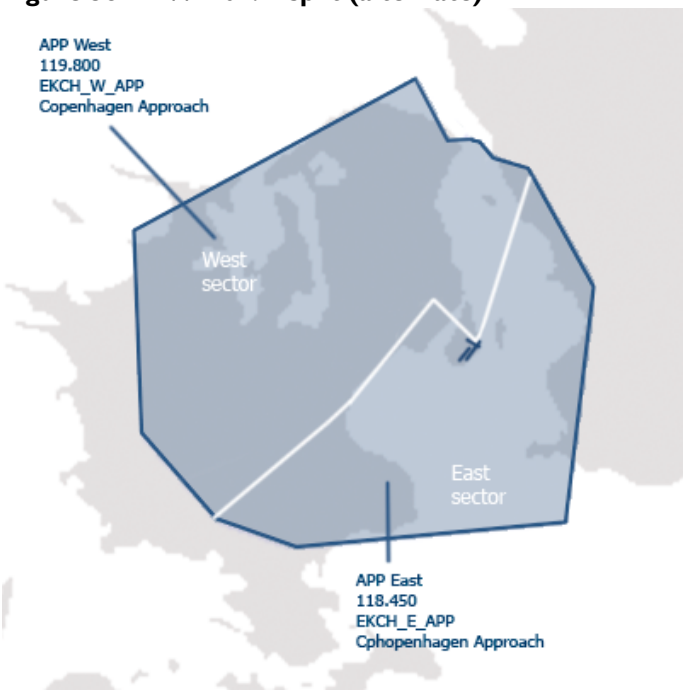
Figure 37 – RWY 04: 2 split



2 controllers:
Approach + Final

Approach handles all arrivals and departures. Final handles traffic from downwind to final.

Figure 38 – RWY 04: 2 split (alternate)



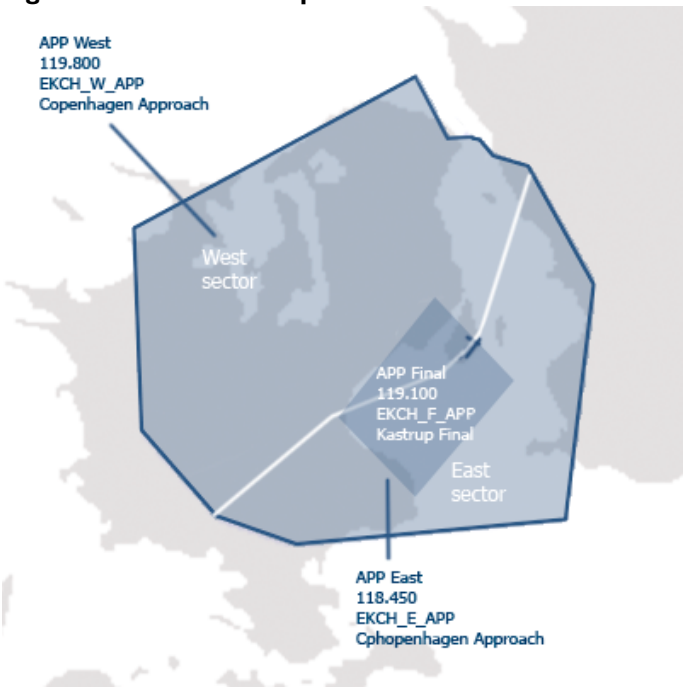
2 controllers:
Approach East + Approach West

The airspace is divided into two areas. Each controller handles departures and arrivals.

In this case Approach East takes all traffic from downwind to final.

Approach West must merge arrivals on a right hand downwind as in high density situations.

Figure 39 – RWY 04: 3 split

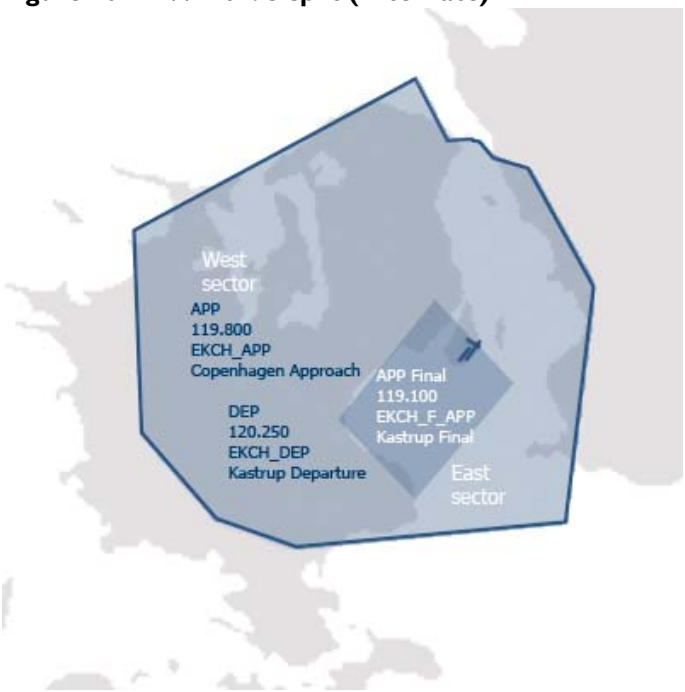


3 controllers:
Approach East + Approach West + Final Approach

The airspace is divided into two areas. Each controller handles departures and arrivals.

Final Appraoch handles traffic from downwind to final.

Figure 40 – RWY 04: 3 split (Alternate)



3 controllers:
Approach + Final Approach + Departure

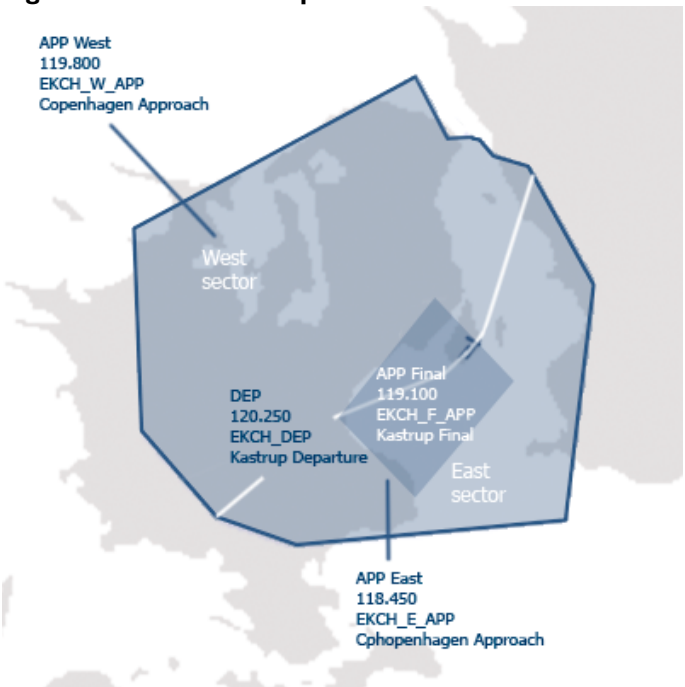
Approach handles all arrivals. These are handed over to Final Approach.

Departure handles all departures.

Final Approach handles traffic from downwind to final.

This set-up should only be used in situations with many departures and a small number of arrivals.

Figure 41 – RWY 04: 4 split



4 controllers:
Approach East + Approach West + Final Approach + Departure

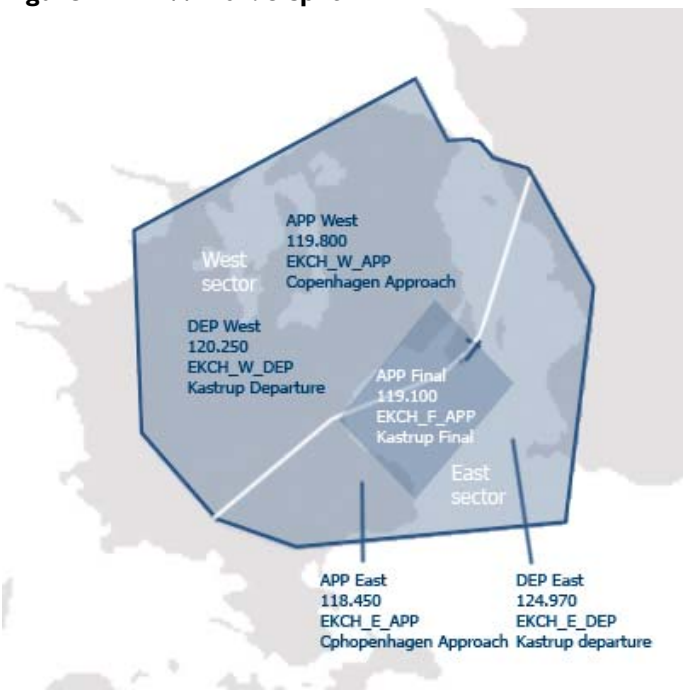
For arriving traffic the airspace is divided into two areas. Each controller handles arrivals only. These are handed over to Final Approach.

All departures are handled by Departure.

Final Approach handles traffic from downwind to final.

This set-up is normal for fly-ins as the departure position isn't as demanding as the APP positions.

Figure 42 – RWY 04: 5 split



5 controllers:
Approach East + Approach West + Final Approach + Departure East + Departure West

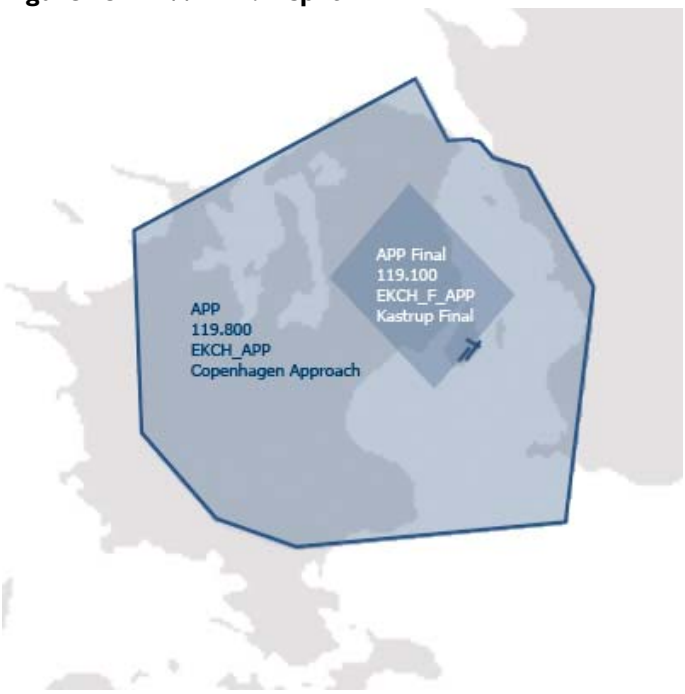
For arriving traffic the airspace is divided into two areas. Each controller handles arrivals only. These are handed over to Final Approach.

For departing traffic the airspace is divided into two areas. Each controller handles arrivals only.

This set-up should be used in heavy density situations with an extreme number of departures.

RUNWAY 12

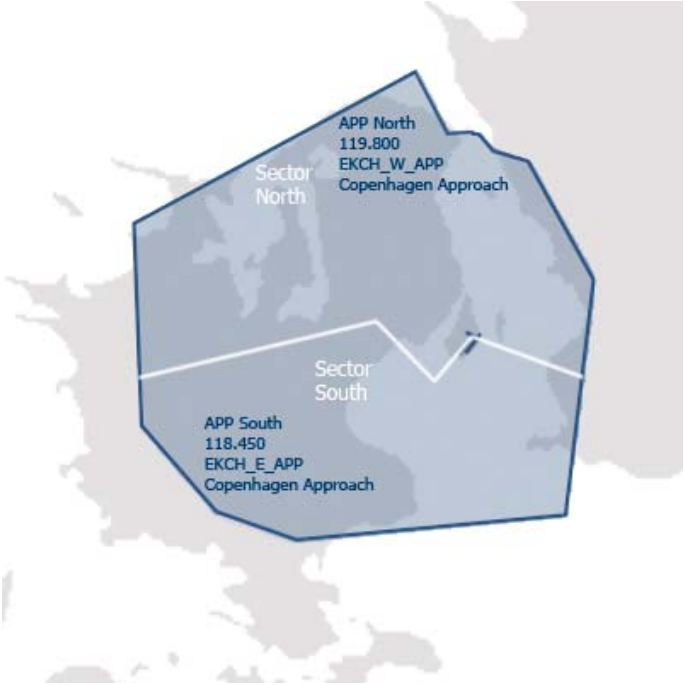
Figure 43 – RWY 12: 2 split



2 controllers:
Approach + Final

Approach handles all arrivals and departures. Final handles traffic from downwind to final.

Figure 44 – RWY 12: 2 split (alternate)



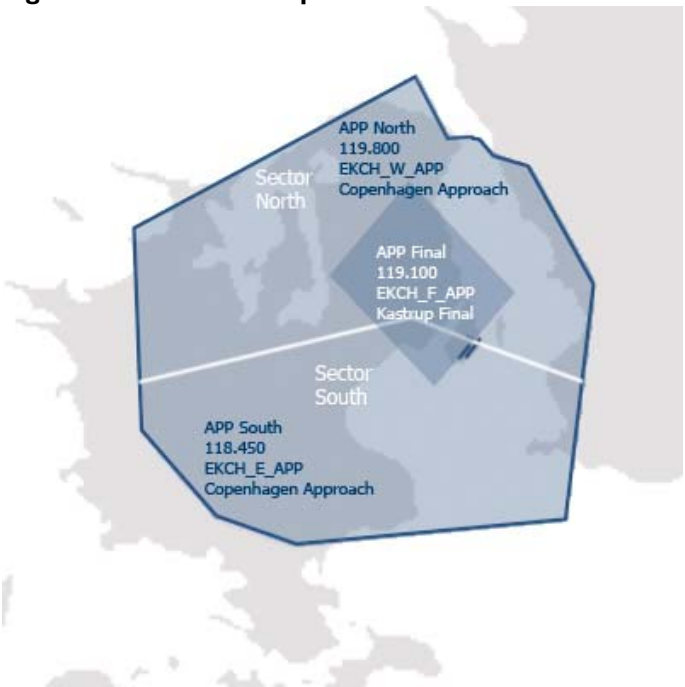
2 controllers:
Approach North + Approach South

The airspace is divided into two areas. Each controller handles departures and arrivals.

In this case Approach North takes all traffic from downwind to final.

Approach South must merge arrivals on a right hand downwind as in high density situations.

Figure 45 – RWY 12: 3 split

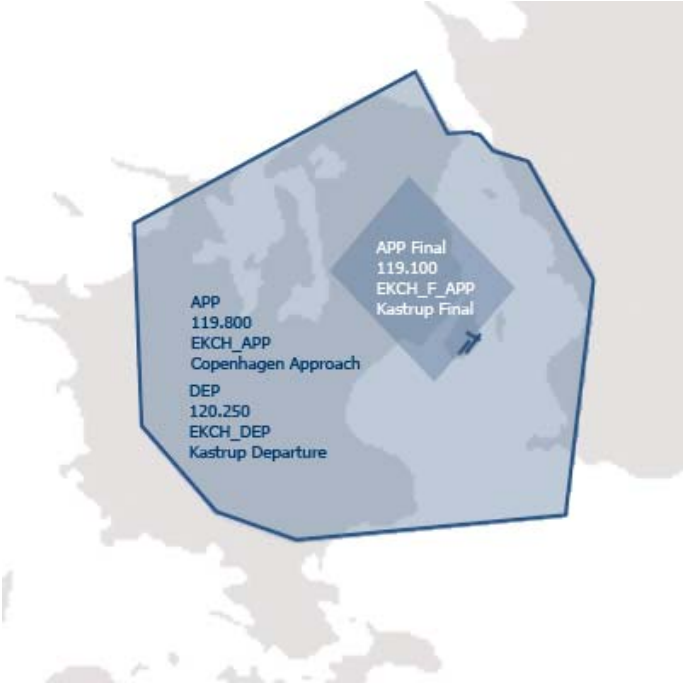


3 controllers:
Approach North + Approach South + Final Approach

The airspace is divided into two areas. Each controller handles departures and arrivals.

Final Appraoch handles traffic from downwind to final.

Figure 46 – RWY 12: 3 split (Alternate)



3 controllers:
Approach + Final Approach + Departure

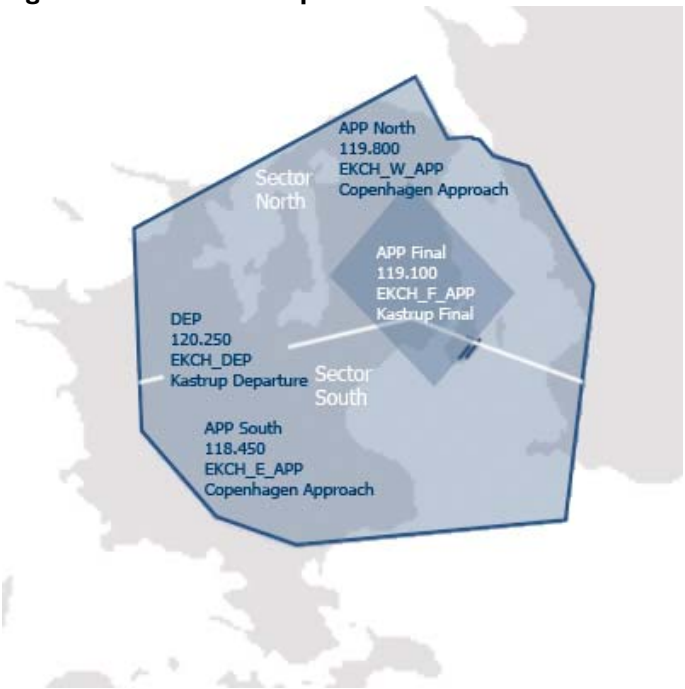
Approach handles all arrivals. These are handed over to Final Approach.

Departure handles all departures.

Final Approach handles traffic from downwind to final.

This set-up should only be used in situations with many departures and a small number of arrivals.

Figure 47 – RWY 12: 4 split



4 controllers:
Approach North + Approach South + Final Approach + Departure

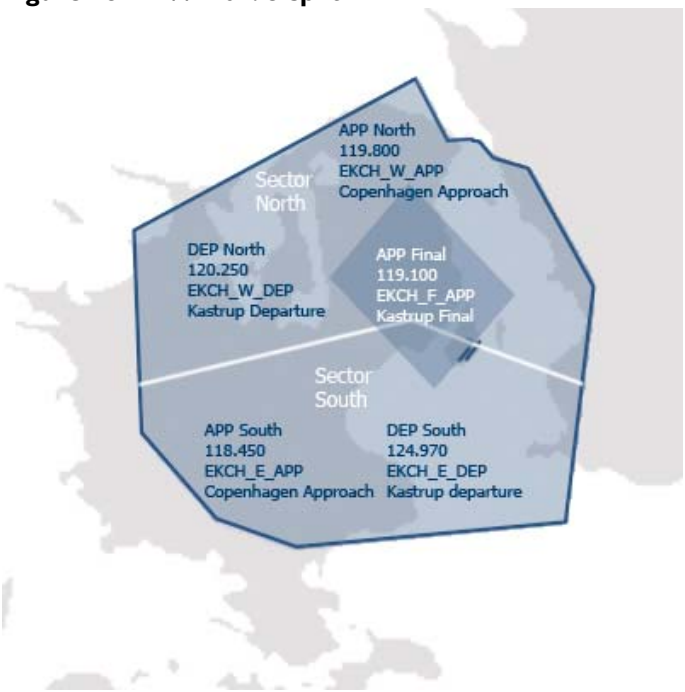
For arriving traffic the airspace is divided into two areas. Each controller handles arrivals only. These are handed over to Final Approach.

All departures are handled by Departure.

Final Approach handles traffic from downwind to final.

This set-up is normal for fly-ins as the departure position isn't as demanding as the APP positions.

Figure 48 – RWY 04: 5 split



5 controllers:
Approach North + Approach South + Final Approach + Departure North + Departure South

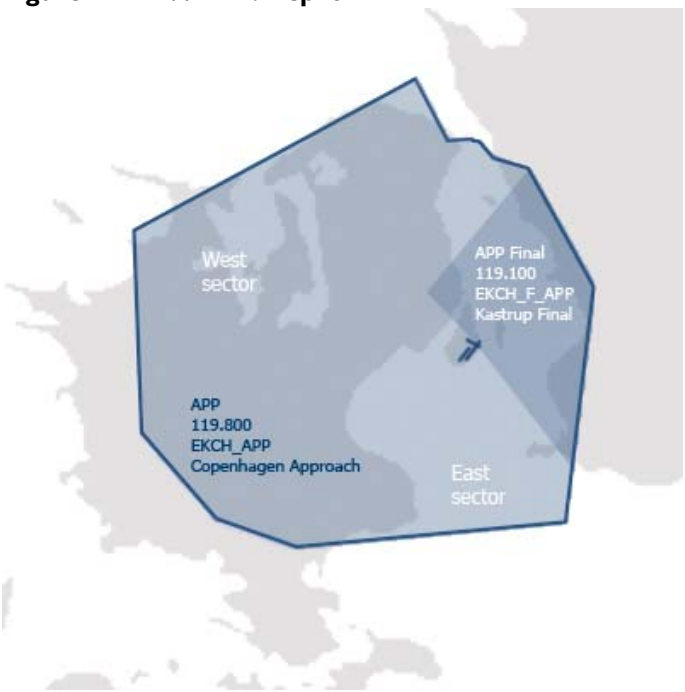
For arriving traffic the airspace is divided into two areas. Each controller handles arrivals only. These are handed over to Final Approach.

For departing traffic the airspace is divided into two areas. Each controller handles arrivals only.

This set-up should be used in heavy density situations with an extreme number of departures.

RUNWAY 22

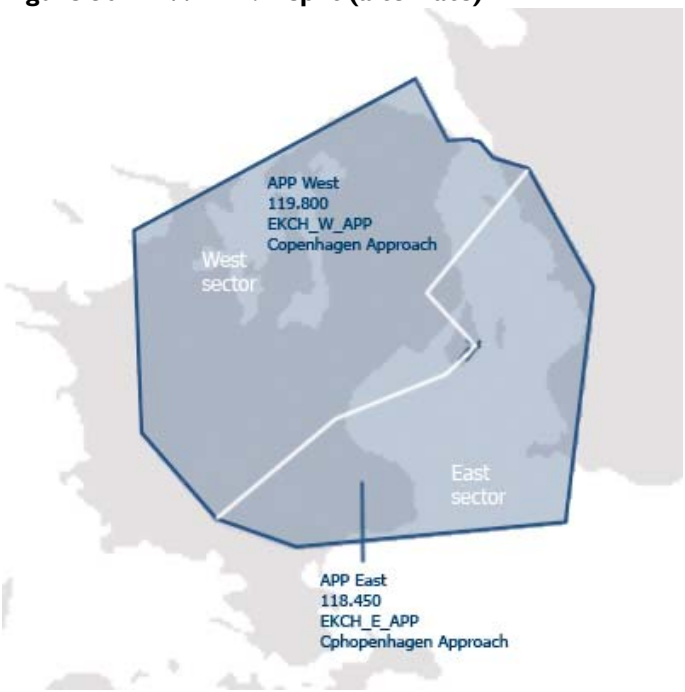
Figure 49 – RWY 22: 2 split



2 controllers:
Approach + Final

Approach handles all arrivals and departures. Final handles traffic from downwind to final.

Figure 50 – RWY 22: 2 split (alternate)



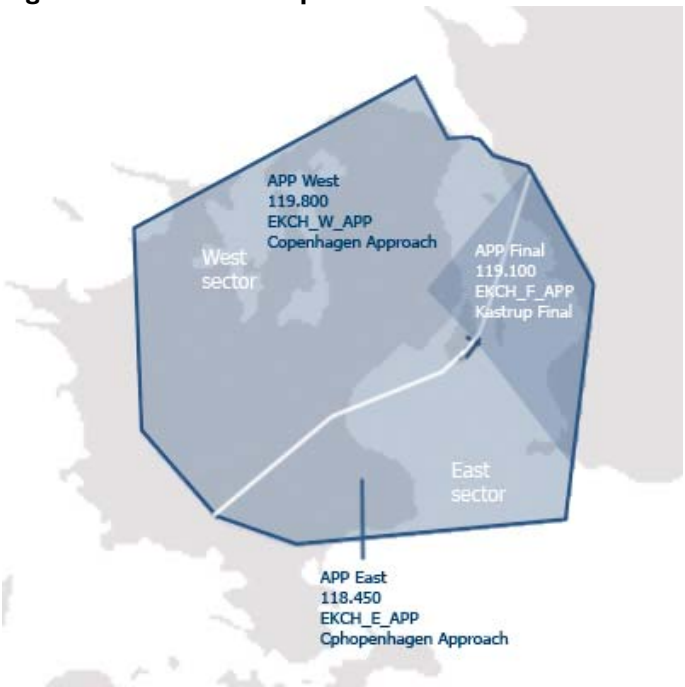
2 controllers:
Approach East + Approach West

The airspace is divided into two areas. Each controller handles departures and arrivals.

In this case Approach East takes all traffic from downwind to final.

Approach West must merge arrivals on a right hand downwind as in high density situations.

Figure 51 – RWY 22: 3 split

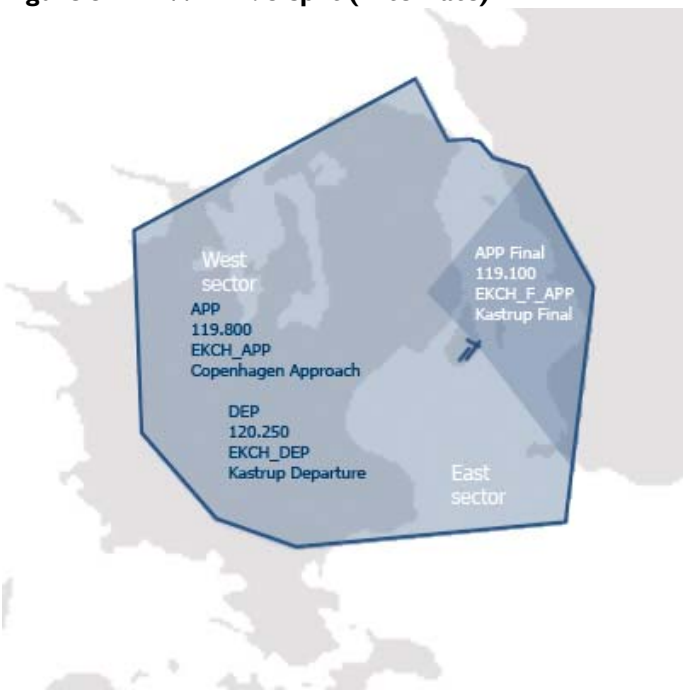


3 controllers:
Approach East + Approach West + Final Approach

The airspace is divided into two areas. Each controller handles departures and arrivals.

Final Appraoch handles traffic from downwind to final.

Figure 52 – RWY 22: 3 split (Alternate)



3 controllers:
Approach + Final Approach + Departure

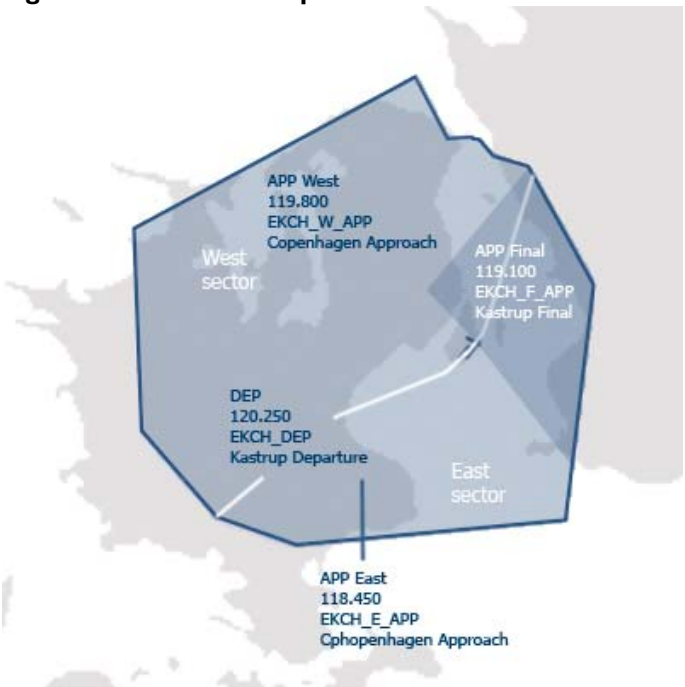
Approach handles all arrivals. These are handed over to Final Approach.

Departure handles all departures.

Final Approach handles traffic from downwind to final.

This set-up should only be used in situations with many departures and a small number of arrivals.

Figure 53 – RWY 22: 4 split



4 controllers:
Approach East + Approach West + Final Approach + Departure

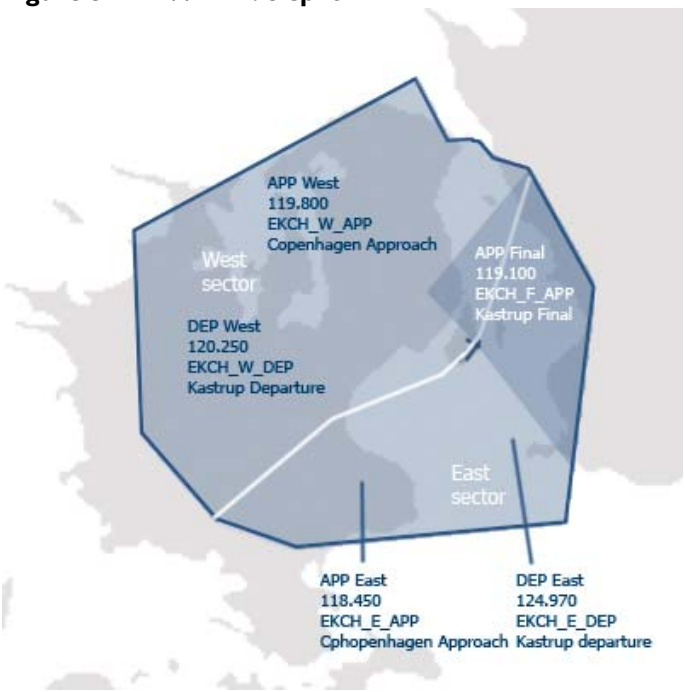
For arriving traffic the airspace is divided into two areas. Each controller handles arrivals only. These are handed over to Final Approach.

All departures are handled by Departure.

Final Approach handles traffic from downwind to final.

This set-up is normal for fly-ins as the departure position isn't as demanding as the APP positions.

Figure 54 – RWY 22: 5 split



5 controllers:
Approach East + Approach West + Final Approach + Departure East + Departure West

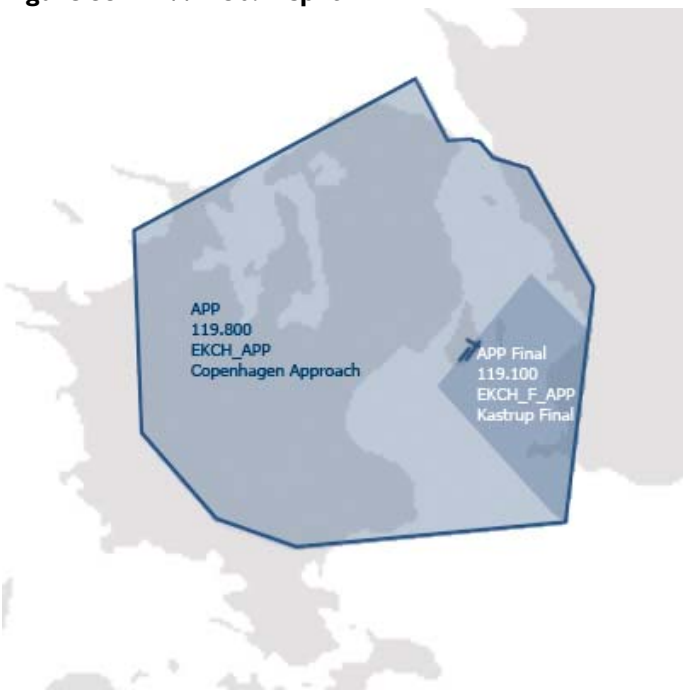
For arriving traffic the airspace is divided into two areas. Each controller handles arrivals only. These are handed over to Final Approach.

For departing traffic the airspace is divided into two areas. Each controller handles arrivals only.

This set-up should be used in heavy density situations with an extreme number of departures.

RUNWAY 30

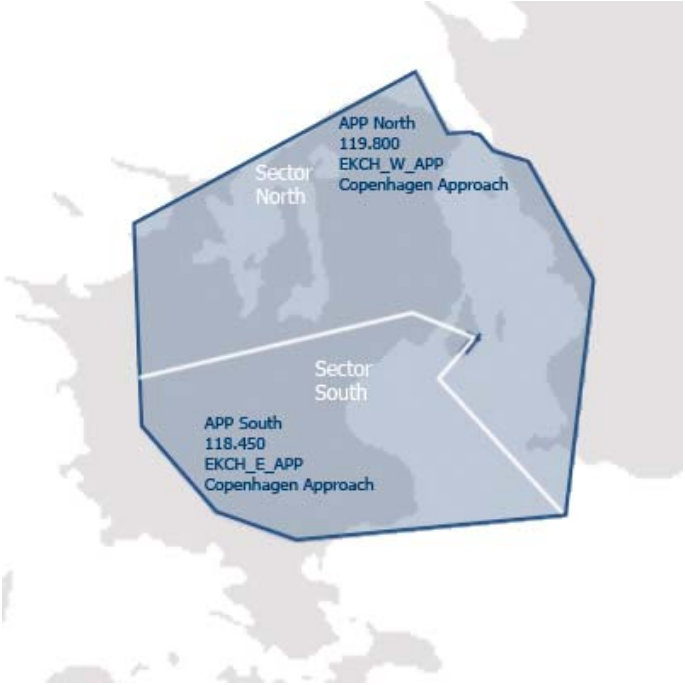
Figure 55 – RWY 30: 2 split



2 controllers:
Approach + Final

Approach handles all arrivals and departures. Final handles traffic from downwind to final.

Figure 56 – RWY 30: 2 split (alternate)



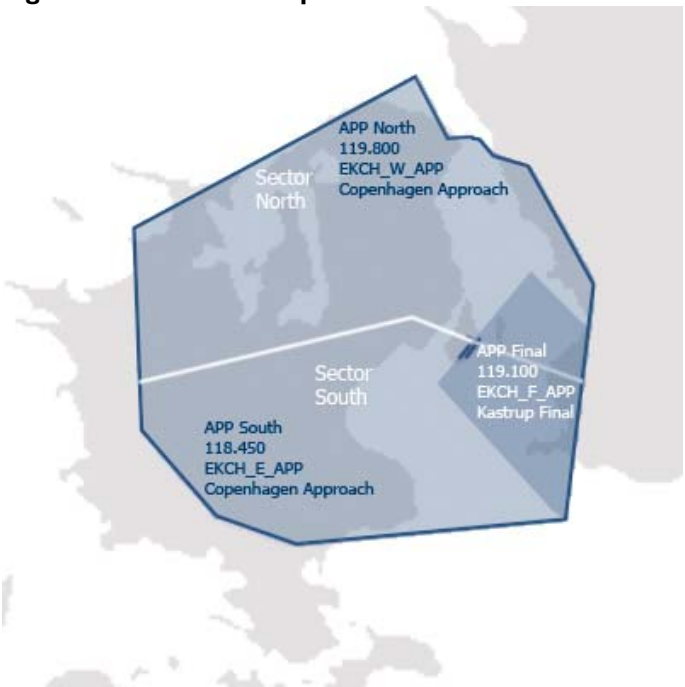
2 controllers:
Approach North + Approach South

The airspace is divided into two areas. Each controller handles departures and arrivals.

In this case Approach North takes all traffic from downwind to final.

Approach South must merge arrivals on a right hand downwind as in high density situations.

Figure 57 – RWY 30: 3 split

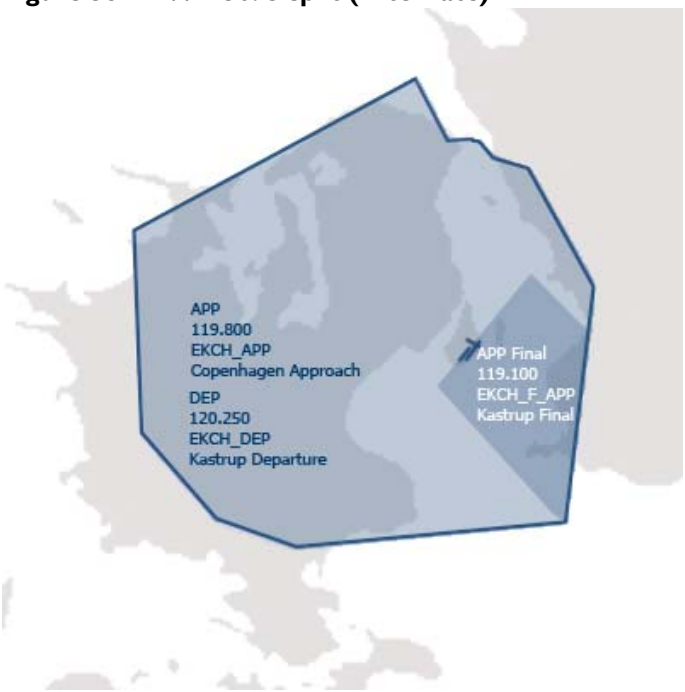


3 controllers:
Approach North + Approach South + Final Approach

The airspace is divided into two areas. Each controller handles departures and arrivals.

Final Appraoch handles traffic from downwind to final.

Figure 58 – RWY 30: 3 split (Alternate)



3 controllers:
Approach + Final Approach + Departure

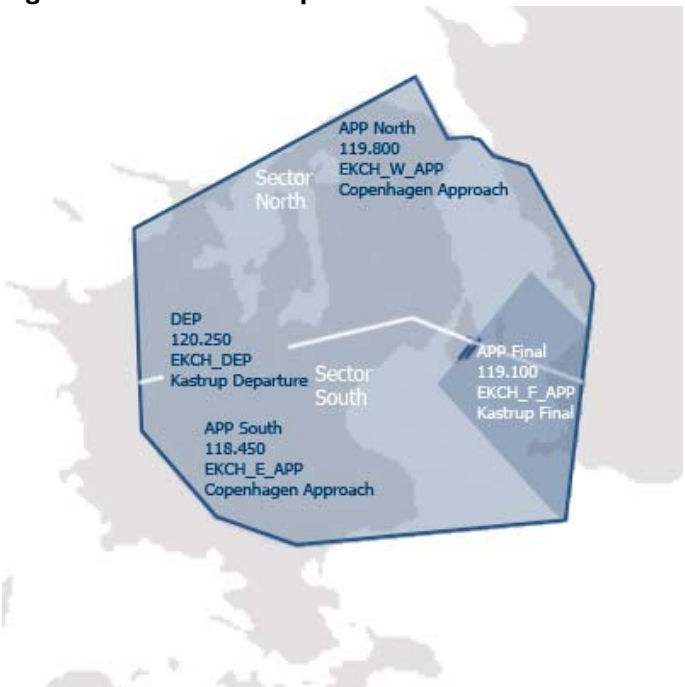
Approach handles all arrivals. These are handed over to Final Approach.

Departure handles all departures.

Final Approach handles traffic from downwind to final.

This set-up should only be used in situations with many departures and a small number of arrivals.

Figure 59 – RWY 30: 4 split



4 controllers:
Approach North + Approach South + Final Approach + Departure

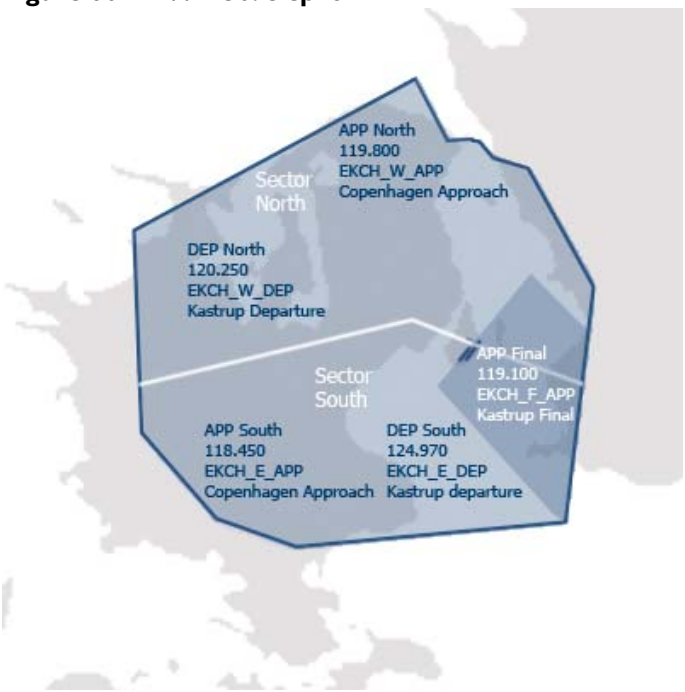
For arriving traffic the airspace is divided into two areas. Each controller handles arrivals only. These are handed over to Final Approach.

All departures are handled by Departure.

Final Approach handles traffic from downwind to final.

This set-up is normal for fly-ins as the departure position isn't as demanding as the APP positions.

Figure 60 – RWY 30: 5 split



5 controllers:
Approach North + Approach South + Final Approach + Departure North + Departure South

For arriving traffic the airspace is divided into two areas. Each controller handles arrivals only. These are handed over to Final Approach.

For departing traffic the airspace is divided into two areas. Each controller handles arrivals only.

This set-up should be used in heavy density situations with an extreme number of departures.

APPENDIX E: VOID

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APPENDIX F: EKBI PLATES

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APPENDIX G: EKYT PLATES

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APPENDIX H: EKAH PLATES

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APPENDIX I: EKRK PLATES

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APPENDIX J: EKCH TAXI ROUTES

There are no issued standard taxi-routes in Copenhagen.
The following two tables give an overview of the most common used taxi routes for arriving and departing aircrafts when runway 04 or 22 is active.
These tables haven't been made for runway 12 and 30 and the taxiway is obvious.

ARRIVALS ON 22L

The recommended taxi routes for arrivals on runway 22L in some cases include a shortcut from TWY B via TWY C and TWY D. This is used be aircrafts with an assigned gate in the western part of the airport.

However aircrafts vacating via TWY B5 or RWY 30 can not use this short cut. Instead the aircraft should continue up on TWY B and turn left on Y or RWY 30 according to the table below.

RUNWAY 22

↘ ARRIVE ↘		↗ DEPART ↗		
B C D Rwy30 K3	L	**A4**	L Z A	*A*
B C D Rwy30 K3	L	**A6**	L Z A	*A*
B C D	D Y M	**A7**	M Z A	*A*
B C D Rwy30 K3	L	**A8**	L Z A	*A*
B C D	D Y M	**A9**	M Z A	*A*
B C D	D Y M	**A11**	M Z A	*A*
B C D	D Y	**A12**	M Z A	*A*
B C D	D Y	**A14**	Y L Z A	*A*
B C D	D Y	**A15**	Y L Z A	*A*
B C D	D Y	**A16**	Y L Z A	*A*
B C D	D Y	**A17**	Y L Z A	*A*
B C D Rwy30 K3	L	**A18**	L Z A	*A*
B C D Rwy30 K3	L	**A19**	L Z A	*A*
B C D Rwy30 K3	L	**A20**	L Z A	*A*
B C D Rwy30 K3	L	**A21**	L Z A	*A*
B C D Rwy30 K2	K J	**A22**	L Z A	*A*
B C D Rwy30 K2	K J	**A23**	L Z A	*A*
B C D Rwy30 K2	K J	**A25**	L Z A	*A*
B C D Rwy30 K2	K J	**A26**	J L Z A	*A*
B C D Rwy30 K2	K J	**A27**	J L Z A	*A*
B C D Rwy30 K2	K J	**A28**	J L Z A	*A*
B C D Rwy30 K2	K J	**A30**	J L Z A	*A*
B C D Rwy30 K2	K	**A31**	J L Z A	*A*
B C D Rwy30 K2	K	**A32**	J L Z A	*A*
B C D Rwy30 K1	Stand	**A33**	J L Z A	*A*
B C D Rwy30 K1	Stand	**A34**	J L Z A	*A*
B C D	D Y L	**A50**	L Z A	*A*
B C D	D Y M	**B2**	M Z A	*A*
B C D	D Y P	**B3**	P F A	*A*
B C D	D Y M	**B4**	M Z A	*A*
B C D	D Y P	**B5**	P F A	*A*
B C D	D Y M	**B6**	M Z A	*A*
B C D	D Y P	**B7**	P F A	*A*
B C D	D Y M	**B8**	M Z A	*A*
B C D	D Y P	**B9**	P F A	*A*
B C D	D Y M	**B10**	M Z A	*A*
B C D	D Y	**B15**	P F A	*A*
B C D	D Y	**B16**	A	*A*
B C D	D Y	**B17**	A	*A*
B C D	D Y	**B19**	A	*A*

↘ ARRIVE ↘		↗ DEPART ↗		
B C D	D Q	**C10**	Q F A	*A*
B	B R	**C23**	R Z F A	*A*
B C D	D Q	**C26**	Q F A	*A*
B C D	D Q	**C28**	Q F A	*A*
B	B R	**C29**	R Z F A	*A*
B C D	D Q	**C30**	Q F A	*A*
B C D	D Q	**C32**	Q F A	*A*
B	B R	**C33**	R Z F A	*A*
B C D	D Q	**C34**	Q F A	*A*
B	B R	**C35**	R Z F A	*A*
B C D	D Q	**C36**	Q F A	*A*
B	B R	**C37**	R Z F A	*A*
B C D	D Q	**C38**	Q F A	*A*
B	B R	**C39**	R Z F A	*A*
B C D	D Q	**C40**	Q F A	*A*
B	B R	**C43**	R Z F A	*A*
B	B R	**C45**	R Z F A	*A*
B	B R	**C47**	R Z F A	*A*
B	B R	**C49**	R Z F A	*A*
B	B R	**D1**	S Z F A	*A*
B	B R	**D2**	S Z F A	*A*
B	B R	**D3**	S Z F A	*A*
B	B R	**D4**	S Z F A	*A*
B	B V	**F90**	V Z F A	*A*
B	B R W	**F91**	W S Z F A	*A*
B	B V	**F92**	V Z F A	*A*
B	B R W	**F93**	W S Z F A	*A*
B	B V	**F94**	V Z F A	*A*
B	B R W	**F95**	W S Z F A	*A*
B	B V	**F96**	V Z F A	*A*
B	B R W	**F97**	W S Z F A	*A*
B	B V	**F98**	V Z F A	*A*
B	B R W T	**E**	T V B Z A *Use 22L if possible*	*A*
B Rwy30 G2	*G*	**G**	G I G2 *Use 22L if possible*	*G2 Rwy30 A*

Black text = GND – *Blue+Italic* text = TWR

Parts marked in blue (RWY30) must be coordinated with TWR DEP.

RUNWAY 04

↘ ARRIVE ↘		↗ DEPART ↗		
A Rwy30 K3	L	**A4**	L Z D C *	*D C B*
A Rwy30 K3	L	**A6**	L Z D C *	*D C B*
A	A Y M	**A7**	M Z D C *	*B*
A Rwy30 K3	L	**A8**	L Z D C *	*D C B*
A	A Y M	**A9**	M Z D C *	*D C B*
A	A Y M	**A11**	M Z D C *	*D C B*
A	A Y	**A12**	M Z D C *	*D C B*
A	A Y	**A14**	Y L Z D C *	*D C B*
A	A Y	**A15**	Y L Z D C *	*D C B*
A	A Y	**A16**	Y L Z D C *	*D C B*
A	A Y	**A17**	Y L Z D C *	*D C B*
A Rwy30 K3	L	**A18**	L Z D C *	*D C B*
A Rwy30 K3	L	**A19**	L Z D C *	*D C B*
A Rwy30 K3	L	**A20**	L Z D C *	*D C B*
A Rwy30 K3	L	**A21**	L Z D C *	*D C B*
A Rwy30 K2	K J	**A22**	L Z D C *	*D C B*
A Rwy30 K2	K J	**A23**	L Z D C *	*D C B*
A Rwy30 K2	K J	**A25**	L Z D C *	*D C B*
A Rwy30 K2	K J	**A26**	J L Z D C *	*D C B*
A Rwy30 K2	K J	**A27**	J L Z D C *	*D C B*
A Rwy30 K2	K J	**A28**	J L Z D C *	*D C B*
A Rwy30 K2	K J	**A30**	J L Z D C *	*D C B*
A Rwy30 K2	K	**A31**	J L Z D C *	*D C B*
A Rwy30 K2	K	**A32**	J L Z D C *	*D C B*
A Rwy30 K1	Stand	**A33**	J L Z D C *	*D C B*
A Rwy30 K1	Stand	**A34**	J L Z D C *	*D C B*
A	A Y L	**A50**	L Z D C *	*D C B*
A	A Y M	**B2**	M Z D C *	*D C B*
A F	F P	**B3**	P F D C *	*D C B*
A	A Y M	**B4**	M Z D C *	*D C B*
A F	F P	**B5**	P F D C *	*D C B*
A	A Y M	**B6**	M Z D C *	*D C B*
A F	F P	**B7**	P F D C *	*D C B*
A	A Y M	**B8**	M Z D C *	*D C B*
A F	F P	**B9**	P F D C *	*D C B*
A	A Y M	**B10**	M Z D C *	*D C B*
A F	F P	**B15**	P Z D C *	*D C B*
A	A Y	**B16**	Y M Z D C *	*D C B*
A	Stand	**B17**	Y M Z D C *	*D C B*
A	Stand	**B19**	Y M Z D C *	*D C B*

↘ ARRIVE ↘		↗ DEPART ↗		
A F	F Q	**C10**	Q D C / Z B	*D C B*
A F	F Y R	**C23**	R B	*B*
A F	F Q	**C26**	Q D C / Z B	*D C B*
A F	F Q	**C28**	Q D C / Z B	*D C B*
A F	F Y R	**C29**	R B	*B*
A F	F Q	**C30**	Q D C / Z B	*D C B*
A F	F Q	**C32**	Q D C / Z B	*D C B*
A F	F Y R	**C33**	R B	*B*
A F	F Q	**C34**	Q D C	*D C B*
A F	F Y R	**C35**	R B	*B*
A F	F Q	**C36**	Q D C	*D C B*
A F	F Y R	**C37**	R B	*B*
A F	F Q	**C38**	Q D C	*D C B*
A F	F Y R	**C39**	R B	*B*
A F	F Q	**C40**	Q D C	*D C B*
A F	F Y R	**C43**	R B	*B*
A F	F Y R	**C45**	R B	*B*
A F	F Y R	**C47**	R B	*B*
A F	F Y R	**C49**	R B	*B*
A F	F Y R	**D1**	S B	*B*
A F	F Y R	**D2**	S B	*B*
A F	F Y R	**D3**	S B	*B*
A F	F Y R	**D4**	S B	*B*
A F	F Y V	**F90**	V B	*B*
A F	F Y R W	**F91**	W S B	*B*
A F	F Y V	**F92**	V B	*B*
A F	F Y R W	**F93**	W S B	*B*
A F	F Y V	**F94**	V B	*B*
A F	F Y R W	**F95**	W S B	*B*
A F	F Y V	**F96**	V B	*B*
A F	F Y R W	**F97**	W S B	*B*
A F	F Y V	**F98**	V B	*B*
A F	F Y R W T	**E**	T V B	*B*
A F Rwy 30 G2 G	G	**G**	G G2	*G2 Rwy 30 B*

Black text = GND – *Blue+Italic* text = TWR

APPENDIX K: TRANSITION LEVELS

The transition altitude in Denmark is in general 3000 ft. However Copenhagen Kastrup (EKCH), Copenhagen Roskilde (EKRK) and Bornholm, Rønne (EKRN) use ad transtion altitude of 5000 ft. The table shows the different transition levels:

	TA3000	TA5000
- 942	FL55	FL75
943 - 959	FL50	FL70
960 - 977	FL45	FL65
978 - 995	FL40	FL60
996 - 1013	FL35	FL55
1014 - 1031	FL30	FL50
1032 - 1050	FL25	FL45
1051 -	FL20	FL40