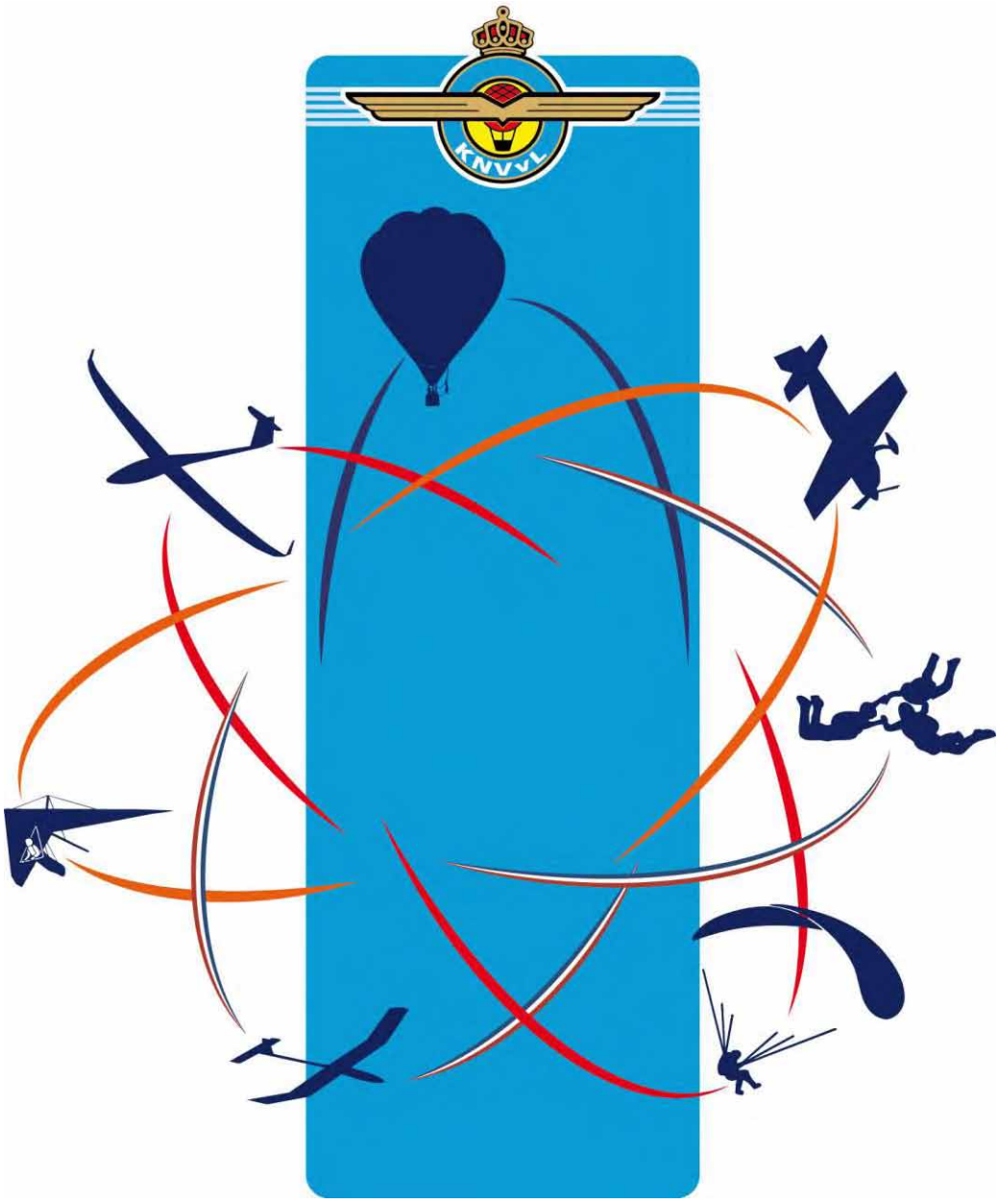
Expansion of Lelystad Airport

How to optimize airspace design to accommodate air traffic bound for Lelystad Airport, a study.



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KNVvL Study Group Airspace
Version 1.5
Woerden, July 24, 2017

Preface

The airspace and proposed routes for Lelystad Airport are going to limit the available airspace for the General Aviation (GA) and especially for non-motorized planes to such an extent that cross-country flying in the east of the Netherlands will be made practically impossible. The east of the Netherlands plays a major role in flying with non-motorized planes and balloons because in the west and the south it is already hardly possible to fly cross-country. The major airfields for airsports are situated in the east. The proposed route over Teuge will lead to a closure of the National Parachuting Centre. The KNVvL supports all airsports and GA and therefore seeks for a solution to have the current airspace secured for airsports, or to limit the restrictions.

We strongly believe this is possible because in the current used airspace by airliners there is a big part that is not or hardly used and can be made available for Lelystad in- and outbound traffic. The routes can be lifted and the lower airspace can be made available again for the airsports and GA.

With a thorough study of the Dutch airspace the KNVvL Study Group Airspace looked at possibilities to accommodate Lelystad Airport air traffic at a more suitable level, without restricting Schiphol air traffic. Hence Inbound and outbound routes at higher altitudes above the provinces of Gelderland, Overijssel and Friesland and an approach initiation at a later stage is the core message of this study. This will not only bring the airspace back to the GA, but will also bring a relief to the citizens living under and near the proposed routes.

The policy worded in the 'Luchtruimvisie' is used as a basis for the study. Next to that it has been taken into account that the changes must be minimal (no changes on B+) to allow the April 2019 timeplan to be met.

The KNVvL is aware of the workload for air traffic controllers in Sector 2 and 3. This study focuses on using airspace where there is very low or no traffic at the moment. In the current situation there is airspace (almost) unused which can be made available for Lelystad traffic. According to the 'Luchtruimvisie' this unused airspace cannot be claimed and blocked for other (Schiphol) traffic when not used. Claiming airspace and not using it because of too many planes in the area can't be a reason to not use it. It should then not be claimed. This available airspace provides the solutions to the current issues.

The proposals are made for four area's. The focus is however on the two problem area's to the east and the south. The problems and solutions for the OUT-2 route over Teuge are discussed in this document, but there is a separate track that focuses completely on Teuge led by Teuge Airport and the National Parachute Centre.

Technical proposals made in this study are for the discussion on route/airspace-optimization. They are not meant to be the final solution and should therefore not be treated as such.

Table of Contents

Abbreviations

	Dutch	English
AMSL	Above Main Sea Level	Above Main Sea Level
ACS	Aero Club Salland	Gliding Club Aero Club Salland
AIP	Aeronautical Information Publication	Aeronautical Information Publication
CDA	Continuous Descent Approach	Continuous Descent Approach
CLSK	Commando Luchtvaart Strijd Krachten	Dutch Air Force Command
CTA	Control Area	Control Area
CTR	Control Zone	Control Zone
EDLV	Niederrhein airport	Niederrhein airport
EDDG	Muster-Osnabruck airport	Munster-Osnabruck airport
EDDL	Dusseldorf airport	Dusseldorf airport
EHAM	Europe Holland Amsterdam (Schiphol)	Europe Holland Amsterdam (Schiphol)
EHEH	Europe Holland Eindhoven	Europe Holland Eindhoven
EHGG	Europe Holland Groningen	Europe Holland Groningen
EHLE	Europe Holland Lelystad	Lelystad Airport
EIA	Environmental Impact Assessment	Environmental Impact Assessment
FL	Flight Level (100 ft)	Flight Level (100 ft)
ft	Voet	Feet
GA	General Aviation	General Aviation
IenM	Ministerie van Infrastructuur en Milieu	Ministry of Infrastructure and Environment
KNVvL	Koninklijke Nederlandse Vereniging van Luchtvaart	Royal Dutch GA Society
LVNL	Landelijke Verkeersleiding Nederland	The Dutch NATS
MCA	Minimum crossing altitude	Minimum crossing altitude
MER	Milieu Effect Rapportage	Environmental Impact Assessment
MME	Militaire Missie Effectiviteit	Military Mission Effectiveness
NATS	n/a	National Air Traffic Services
NM	Nautical Mile	Nautical Mile
QNH	Altitude with reference to sea level	Altitude with reference to sea level
SID	Standard Instrument Departure	Standard Instrument Departure
STAR	Sandard Arrival Route	Sandard Arrival Route
TA/TL	Transition Altitude/Transition Level	Transition Altitude/Transition Level
TMA	Terminal Manoeuvring Area	Terminal Manoeuvring Area
TGAL	Report Toekomstvaste General Aviation Locations	Report Futureproof General Aviation Locations
TMA	Terminal Control Area	Terminal Control Area
UIR	Upper Flight Information Region	Upper Flight Information Region
UTA	Upper Control Area	Upper Control Area
VFR	Visual Flight Rules	Visual Flight Rules
UTA	Upper Control Area	Upper Control Area
VFR	Visual Flight Rules	Visual Flight Rules
ZCNOP	Zweefvlieg Club Noord-Oost Polder	Gliding Club Noord-Oost Polder

Introduction

Due to prospective problems with regard to capacity and noise production at Schiphol Airport the Dutch government decided in 2010 to develop Lelystad Airport into a mid-sized airport suitable for B737/A320 sized airplanes. The runway will be extended and a new terminal will be build.

It will be a big challenge to accommodate the EHLE traffic into the Dutch airspace without interference with Schiphol traffic due to the close proximity of both airports to each other. The assignment by the so called ***Alderstafeloverleg*** to develop the in- and outbound routes was given to "To70". The routes developed bij To70 are the SID and STAR routes within the "Lelystad area" and are checked for the Provence of Flevoland, plus the area west of the city of Zwolle, with regard to environmental impact. On June the 26th, 2017, the LVNL and CLSK presented a proposal for connecting routes onto the higher level routes without consulting the stakeholders as mentioned in the document "werkproces gezamenlijk luchtruim- en procedureontwerp".

It was unclear until a late stage for the Provence of Overijssel what impact the proposed routes would give on the environment East and North of Zwolle. The Provence of Gelderland was representing the Provence of Overijssel as well and it is unclear why the citizen living underneath the proposed routes were not informed. At an early stage the KNVvL, the Aero Club Salland and the ZCNOP were aware of the possible impact on their activities caused by the proposed routes. The KNVvL, ACS and ZCNOP have tried to get an inside in the process making of the route proposals (zienswijze 18, 91, 121, 282, 286, "Nota van Antwoord op zienswijzen en adviezen", 20 dec 2013). The same period there was an active discussion between stakeholders of the Dutch aviation to pinpoint possible suitable airstrips with prospects. The parties involved were stakeholders of the general aviation, sporting aviation and LVNL, CLSK. This lead to the report TGAL which was presented to the Dutch government in 2014. However, this report pinpointed only the problem areas without bringing up a solution. The KNVvL applied multiple times for a position at the so called Alderstafeloverleg, however this request was rejected as the KNVvL was not seen as a stakeholder for Lelystad Airport.

At June the 26th, 2017, The LVNL and CLSK published their route proposals for the connecting route structure between the TMA EHLE and higher altitudes route structure. This route proposal has a devastating effect on the parachute jumping activities at Teuge airport. The National Parachuting Centre at Teuge airport is responsible for 50% of the annual turnover at Teuge airport, without this turnover the prospect of Teuge is unclear.

In the upcoming weeks consultation will take place between stakeholders of the Dutch airspace, this study must be seen as an opening in the discussion how to hear all stakeholders.

xxxxxxx according the document "werkproces gezamenlijk luchtruim- en procedureontwerp".

This study can be seen as an overture to work towards the goals of the airspace-vision.

Dutch airspace with all STAR's en SID's

The study group made a projection of all SID's and STAR's within the Dutch airspace to get a clear picture how to accommodate the EHLE routes. A map was made using original data from the AIP, deliberately without TMA and CTA boundaries. (fig.1) Another projection was made on a VFR "Aeronautical Chart ICAO" as well, with all these boundaries incorporated.(fig.2)

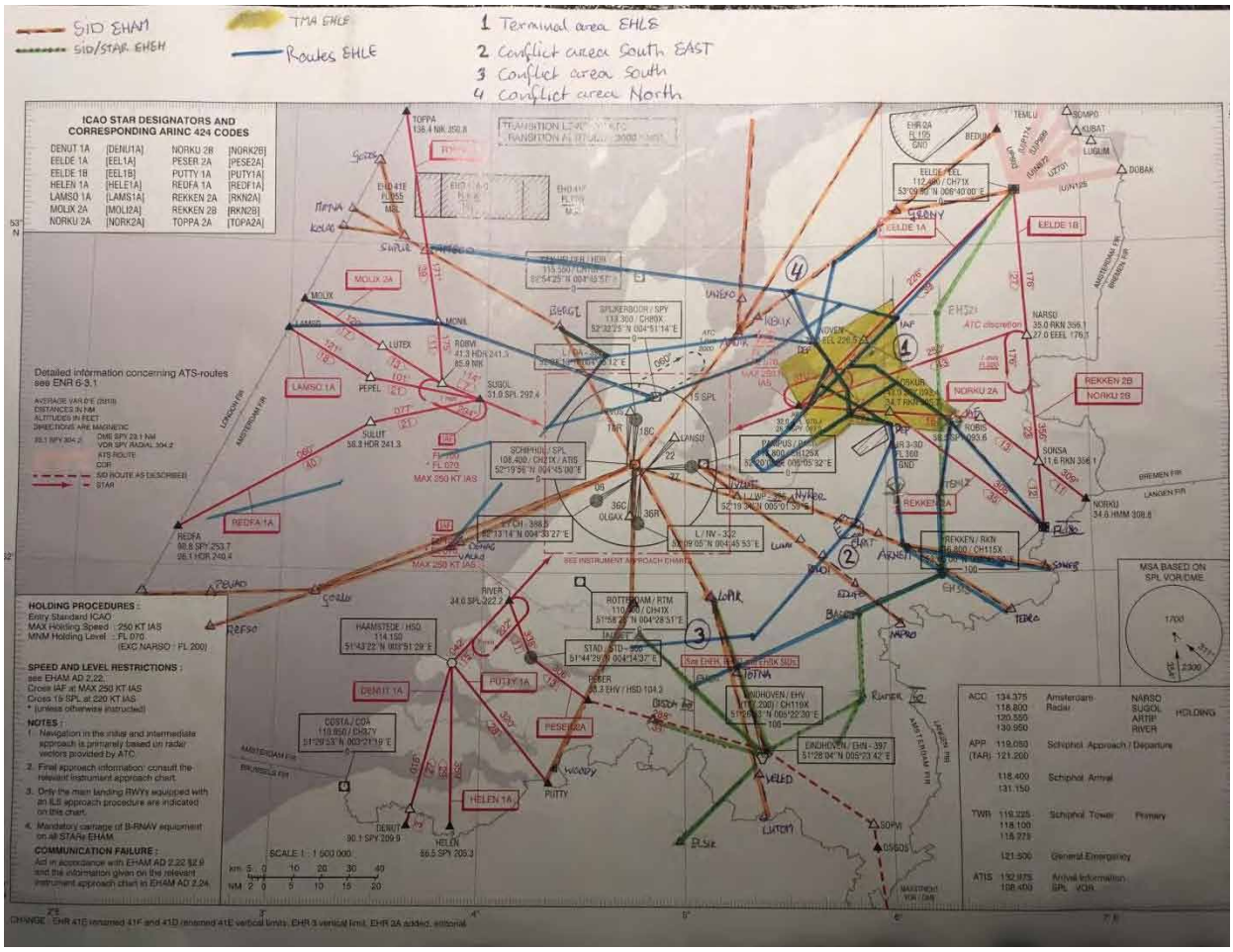
Most limiting departure routes outbound EHAM were studied, these are the departures from RWY 09 and RWY 18L, Eastbound and Southeast bound. A minimum crossing of FL150 is mentioned on the SID by the RNAV point of EDUPO, source AIP EHAM 2.22, 1.5.3. A minimum crossing of FL250 by the RNAV point of OLDOD is mentioned for the ARNEM, NYKER en ELPAT. The LOPIK departure prescribes a minimum crossing of FL100 by the point LOPIK and FL250 by the point .

The STAR inbound EHAM via ARTIP prescribes to cross ARTIP between FL70 and FL100. (Note: with strong westerly wind conditions ARTIP will be crossed around FL90 on an optimal CDA approach straight-in for RWY 27, including a deceleration segment). There are no MCA's defined for the RNAV points OSKUR and NOVEN. For crossing the border inbound the Netherlands a flying level is defined, in between FL280 maximum and FL180 minimum.

A minimum altitude of FL 70 at 18.8NM EEL and 22.2NM EEL are prescribed for EHGG and EHEH STAR's and SID's. Outbound EHEH a crossing altitude of FL60 at RNAV point RUMER is mentioned (departure and arrival). Outbound traffic EHEH with destination EHGG is allowed to fly at max FL95, and with destination EHAM at max FL75, according the AIP EHEH 2.22, 1.4.2.

The KNVvL study group Airspace (SGA) pinpointed four specific "conflict areas" after processing all data in one chart. The SGA worked on a solution for all these four areas separately:

- Terminal area EHLE, "area 1"
- Conflict area South East, "area 2"
- Conflict area South, "area 3"
- Conflict area North , "area 4"



1. *Present route proposals projected with all STAR's en SID's within Dutch airspace*

2. *Aeronautical Chart the Netherlands with all routes*

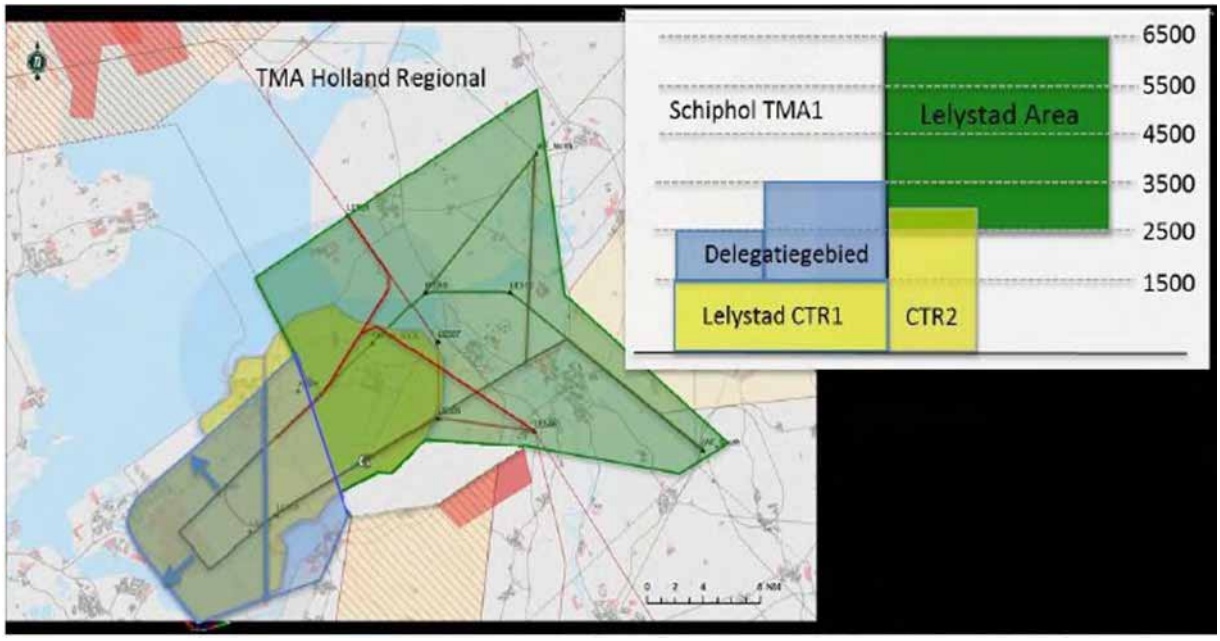
How to fit Lelystad Airspace into Dutch airspace

Study of conflict area 1, TMA EHLE.

The Dutch government consulted “To70” to develop a route structure were EHLE air traffic is accommodated taking into account the following:

- Avoid populated areas as much as possible
- Above 3000 feet at designated environmental areas (Natura 2000 areas)
- TMA Schiphol needs to be avoided
- Outbound traffic needs to cross the border with the “old land” flying above 6000 feet

To make this possible the easy way, To70 projected all routes within TMA Lelystad underneath CTA East 1 Amsterdam with Schiphol TMA 4 as the boundary on the Westside. The lower level of this “Lelystad area” is at 2500 feet with an upper level at 6500 feet, or FL65 (as is the lower level of CTA Amsterdam). The lateral boundaries are drawn along the villages of Urk and Emmeloord on the Northside, Steenwijk, Zwartsluis and Nieuwleusen on the Eastside, Ommen, Raalte and Wezep on the Southside. The mentioned Lelystad area in green drawn in the map presented below.

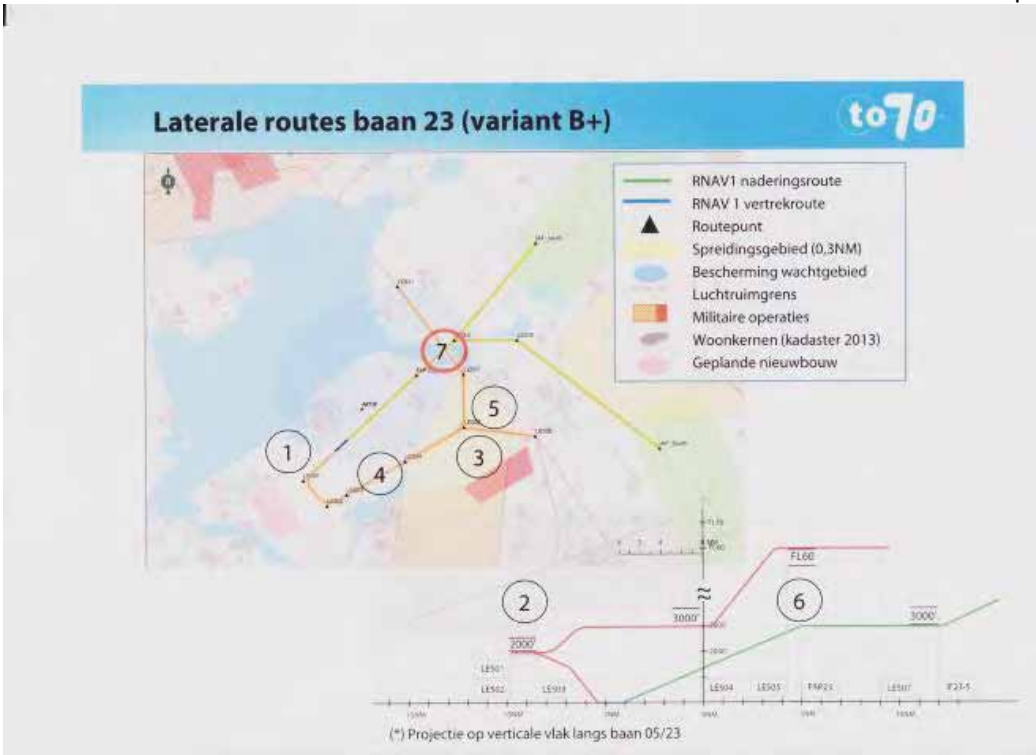


3. *CTR TMA Lelystad voorstel 2014*

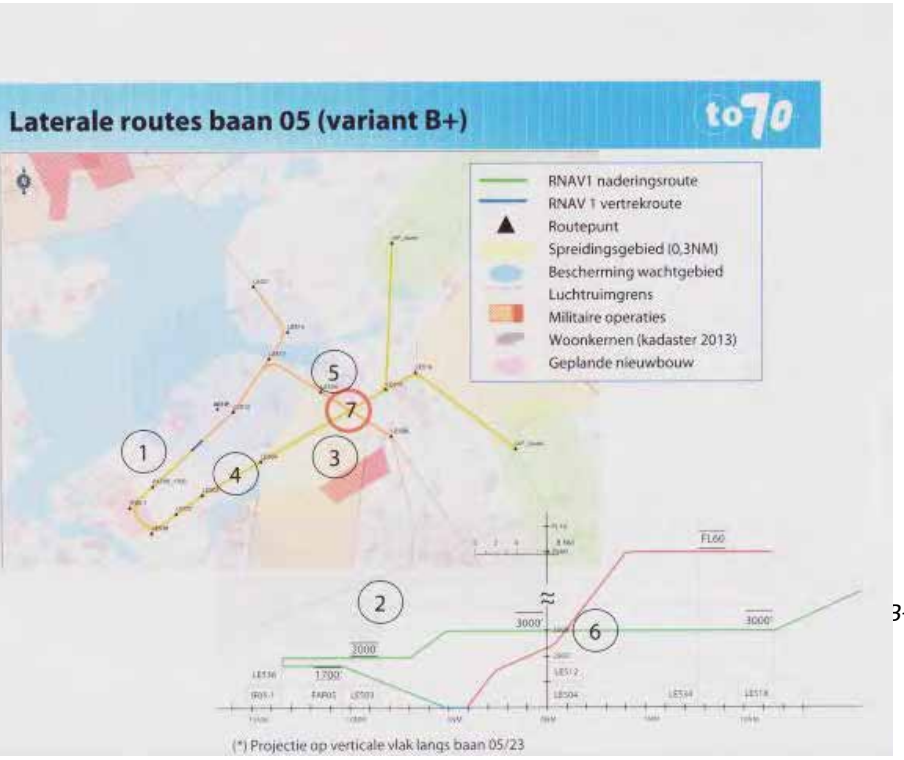
The B+ route variant was chosen by the so called Alderstafeloverleg. These routes are drawn in red (outbound) and green (inbound). (note: these routes were not consulted with the stakeholders according the “werkproces gezamenlijk luchtruim- en procedureontwerp”)

With the factsheet, may 2017, the secretary of state clarifies the procedures regarding the inbound traffic for Lelystad Airport. It only mentions the inbound route via IAF_SOUTH, the exit RNAV points plus the IAF_NORTH were omitted. Exact altitudes and minimum flying levels were not mentioned in this factsheet as well, raising a lot of questions.

Charts presented underneath, made by To70, are giving a lateral en vertical projection of for both

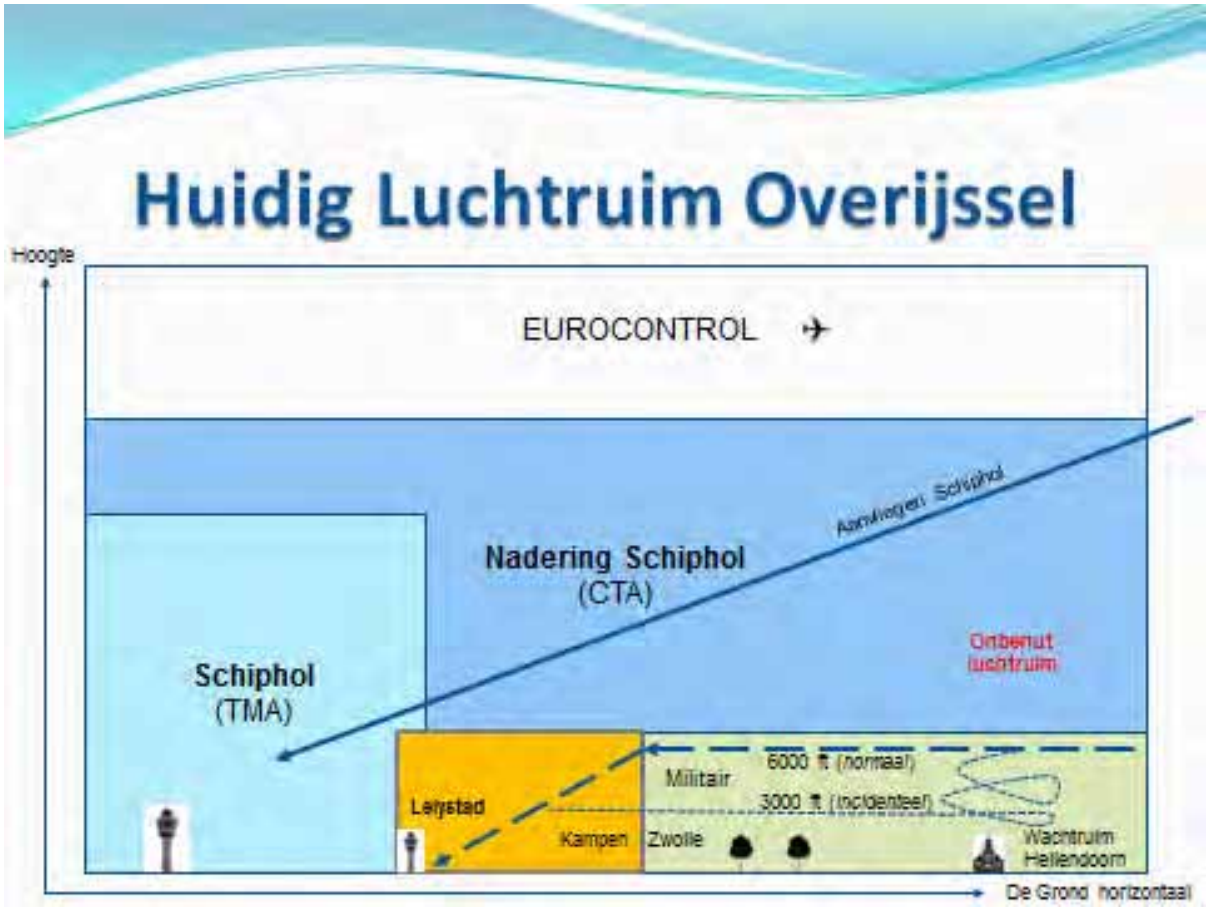


4. rwy 23 B+



3+

Underneath the translation of the factsheet by local airspace experts.



6. translation factsheet ministry of I & M by SGA

Concern of the Study Group Airspace around conflict area 1

By not consulting the stakeholders in the general aviation beforehand, uncertainty is created by the ministry. The SGA is afraid that a great part of unused airspace remains unused. Airspace that is available to accommodate EHLE traffic. The gliding clubs ACS, ZCNOP and ZCFlevo will face stringent restrictions due to the planed route structure and holding patterns. On an “Alderstafel” sidetrack the gliding club ZCFlevo is in the process of moving their activities towards the main land. The ACS is only mentioned in government documents as a club who still needs to be informed about stringent restrictions, which restrictions is not mentioned. The gliding club ZCNOP is not mentioned at all in any government document.

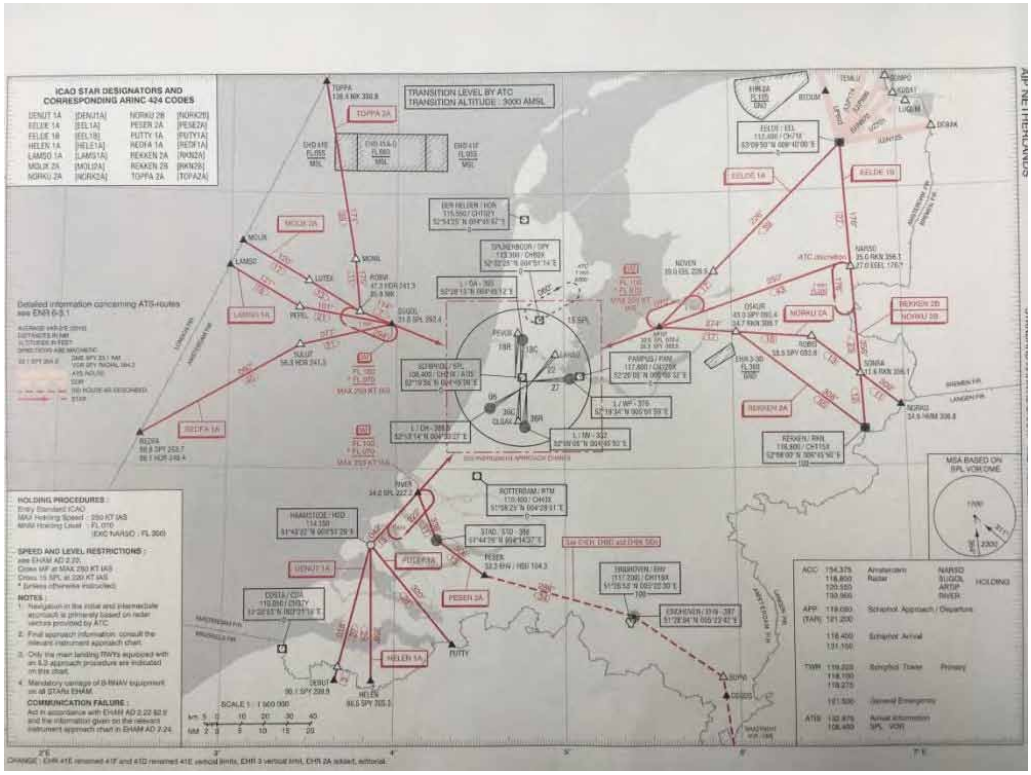
The size of the EHLE CTR is of great concern as well. Almost the size of the complete polder of Flevoland. This reduces the flying activities of the GA in general and paramotor and paraglide activities West of Zeewolde.

Which problems will be faced by the the gliding clubs ACS en ZCNOP and the GA in general

- RNAV fix IAF_South plus holding pattern will be situated directly above the gliding side of ACS, this will result in possible stringent restrictions.
- The inbound route from RNAV fix IAF_North is projected right overhead the gliding side of ZCNOP, resulting in a possible tight altitude restriction.
- A tight restriction for the GA in general
- A large part of the airspace towards the south of the TMA area will be restricted unnecessary by the fact that outbound traffic is restricted in their climb by a maximum level of FL060.

Observations of the Study Group Airspace KNVvL

- Approaching air traffic seldom descents below FL150 before the RNAV points OSKUR or NOVEN (approach chart Schiphol, fig. 7);
- The projected CTR EHLE is laterally unnecessary large, especially when the planed SID and STAR routes are implemented, this results in less space for safe VFR routes;
- Vertically the projected TMA EHLE is too small to accommodate the intended amount of traffic;
- Only the Provence of Flevoland and an area West of the city of Zwolle is studied to provide an environmental report; the areas East and North of Zwolle were not studied and are not part of the environment report (MER);
- The impact of the proposed TMA EHLE is unclear taking into account the gliding activities of the ACS and ZCNOP;
- The agenda and procedure according the document ”Work process simultaneous use of airspace and procedures” was not followed; a level playing field was biased this way;
- GA stakeholders were not allowed to give input at the so called “Alderstafeloverleg”;
- There are only a few independent bureaus with expertise on airspace structure and aviation;
- There is time pressure, the opening of the new EHLE airport is planned for April 2019;
- A report “Vision on Dutch Airspace 2012” exists, however ; nothing seems to be done with the intentions mentioned in this report while the authorities refer to passages out of this report;
- Many uncertainties about the use of airspace within the TMA are created by the factsheets of the government.



7. Approach chart Schiphol, East Netherlands

Proposal of the Study Group Airspace on conflict area 1

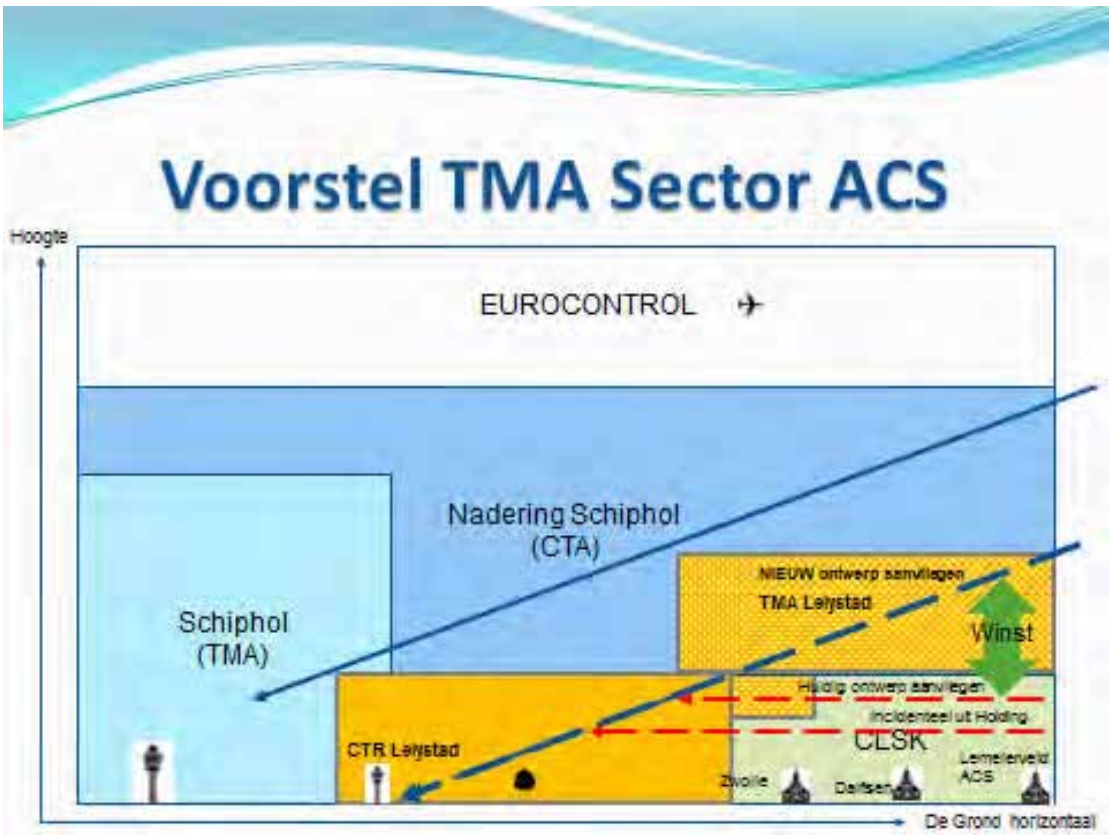
The present route and airspace proposal of the LVNL/CLSK for the CTR/TMA EHLE are unnecessary restrictive and thus undesirable. Especially while taking into account all threats the gliding clubs in this area are facing plus the GA in general.

The routes are fixed according the ministry of I&M, so with the observations of the SGA the group is presenting the following recommendations, in so creating a winning situation for all parties involved:

- Create CTR and TMA areas using the “upside down wedding cake” method as mentioned in the vision Dutch airspace 2012, and used worldwide to optimize use of airspace;
- Put the CTR North boundary along the line Highway A6 towards the village of Swifterbant;
- Put the CTR South boundary along the road N305, West of the village of Zeewolde;
- Make use of the unused airspace within CTA Amsterdam North, East and South of the RNAV points OSKUR and NOVEN to accommodate a TMA EHLE. We recommend a MCA of FL120 at OSKUR and NOVEN for traffic inbound Schiphol;
- Increase the lower altitude of the ARTIP holding pattern by 1000 feet till FL80, this will have no effect on the Schiphol air traffic;
- Create a multi-stage TMA with a lower level of FL65 till the RNAV points OSKUR and NOVEN, West of these RNAV points the lower level will go down till 2500 feet in a multi-stage way; (fig. 8)
- The upper level of TMA EHLE will be at FL115 till the RNAV points NOVEN and OSKUR, West of these points the upper level will descent to FL75 in a multi-stage way;
- Create a gliding sector above and East of the gliding side of ZCNOP as to facilitate gliding activities; (fig. 9)
- The advantages are:
    - More airspace available for EHLE approach control to facilitate EHLE bound traffic;
    - A multi-stage TMA model facilitates continuous descent approaches;
    - Approaching air traffic remains flying above the transition level resulting in less waist of airspace;
    - No, or much less, effect on “Military Mission Effectiveness’”.
    - More room to create an emergency holding pattern close to the aerodrome (The lower levels of the ARTIP holding might be used for that purpose);
    - Enabling of more fuel efficient flying and less noisy air traffic in- and outbound EHLE;
    - Less impact on the environment of the “Vecht Valley” ,” Sallandse heuvelrug”, the area of “Weerribben/Wieden” and the Valley of the” Gelderse Ijssel” so creating a change of more acceptance by the citizen living in the mentioned areas;
    - No, till less, restrictions for the GA and in particular for the ACS and ZCNOP;
    - More airspace to accommodate a continuous climb resulting in a more fuel-efficient flightpath so resulting in less exhaust of CO2;
    - More airspace around the CTR to define safe VFR routes;
    - Room to accommodate the flying activities of the paragliding and paramotor club West of Zeewolde.

    **If the minimum crossing altitude at Artip holding will remain at FL70 all mentioned altitudes will be lowered by 1000 feet.*

Vertical drawing of the proposal:



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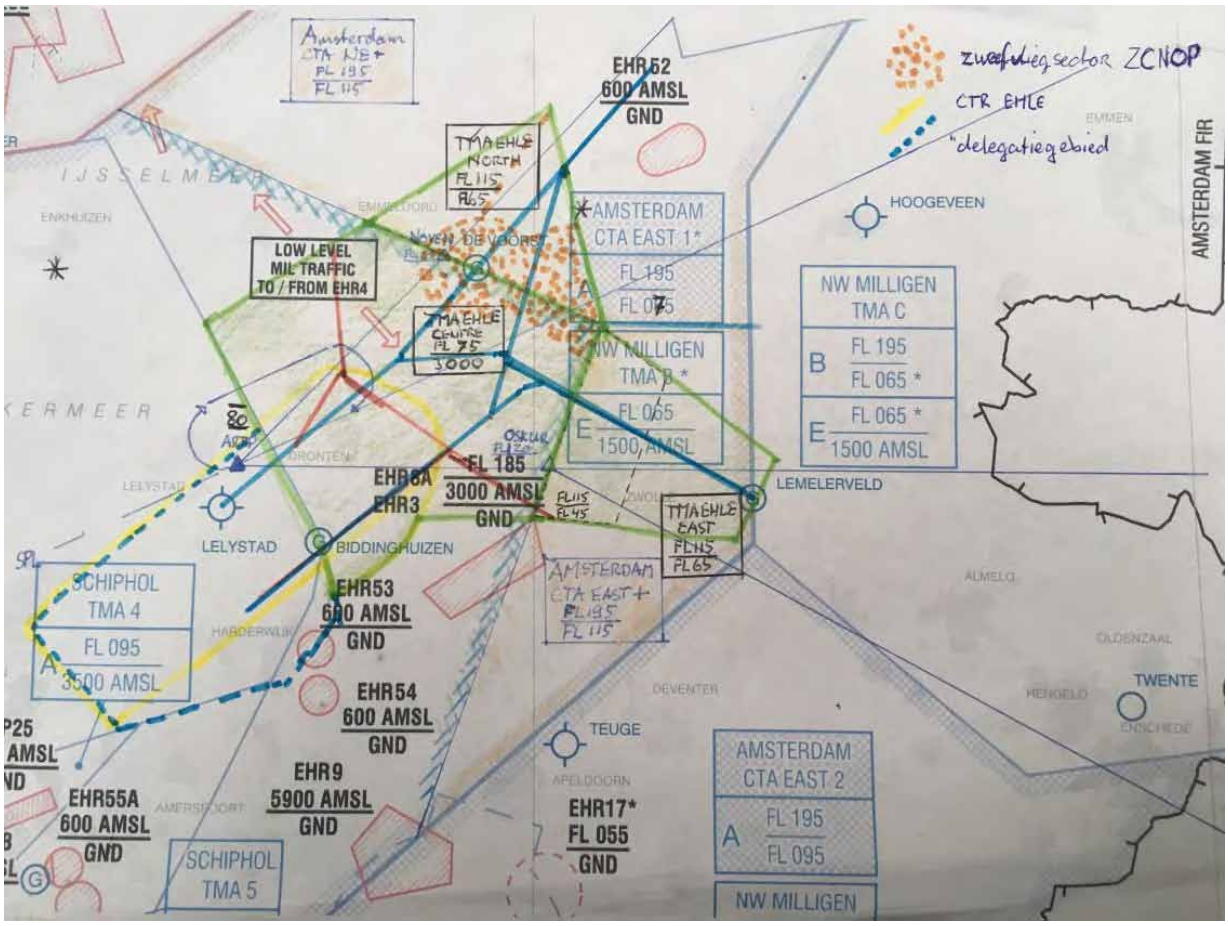
9.

10. Projected horizontally in a detailed map:

11. Projected horizontally in an aeronautical map (AIP)



Concern SGA around conflict area 2

Area 2, the area towards the Southeast of TMA EHLE, a complex area to accommodate the routes in- and outbound EHLE. There are three SID routes out of EHAM towards the EAST in this area. At some point the outbound traffic departing from EHLE needs to join those routes towards the East and South. Besides that, the border with Germany needs to be crossed at minimum FL180, inbound and outbound.

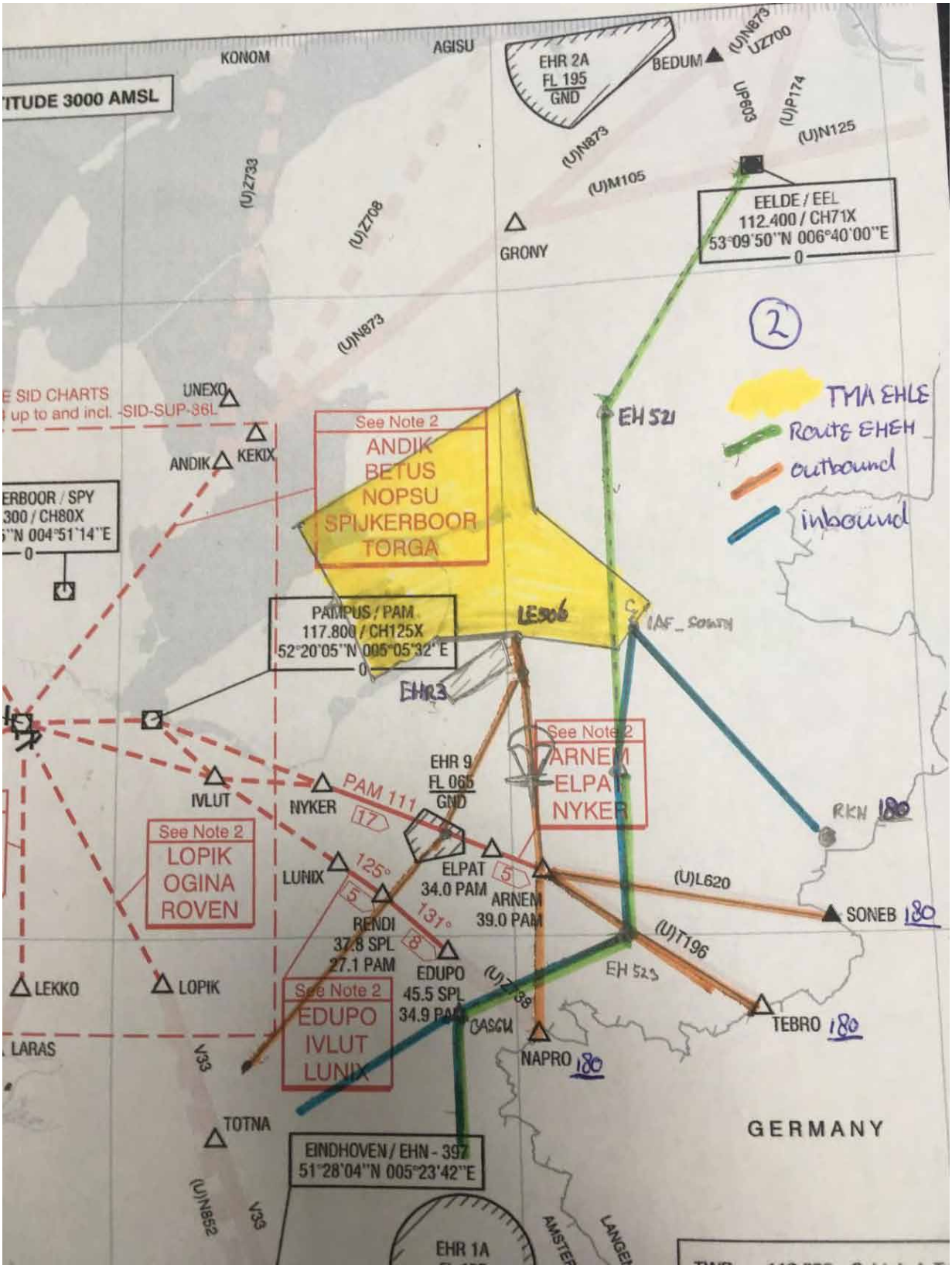
A route between the Dutch airfield EHGG and EHEH is crossing this area as well, but only used incidentally.

The area of EHEH and Brussel will be approached when flying further South. This area will be discussed in a separate chapter.

The present route proposals by the LVNL and CLSK are very restrictive, especially for the Dutch National Parachuting Centre at Teuge airport. These constructed low level routes results in unnecessary high fuel-consumption and noise production by the airliners using these routes.

Observations of the Study Group Airspace KNVvL

- The proposed routes result in unnecessary low flying for a long period by airliners underneath CTA Amsterdam;
- Air traffic bound for EHLE is the only air traffic which is not allowed to use CTA Amsterdam;
- Air traffic inbound Schiphol is no conflict with outbound EHLE traffic in the direction Southeast;
- Schiphol outbound traffic needs to cross the border with Germany at a sufficient high level so creating plenty of airspace in the area of Deventer-Apeldoorn-Arnhem. Without operational restrictions you can define airspace for arriving and departing EHLE traffic;
- Outbound route “OUT-02”is unnecessarily projected at a low level overhead the airfield of Teuge;
- The proposed maximum flying altitude overhead the RNAV point ARNEM on route “OUT-2” makes it almost impossible for airliners to cross the German border at the MCA of FL180;
- The length of the arrival route IN-02 towards IAF_SOUTH is too short for an approach with normal flying techniques; (Note: Regarding the MCA of FL180 at RKN the profile is perfect for a CDA, including deceleration segments, onto the final approach at EHLE, the approximate crossing altitude at IAF_SOUTH will be FL090
- There is a conflict in the arrival route IN-06 with the departure route OUT-2 and the routes via ARNEM-SONEB plus ARNEM-TEBRO, in altitude, route and airspace.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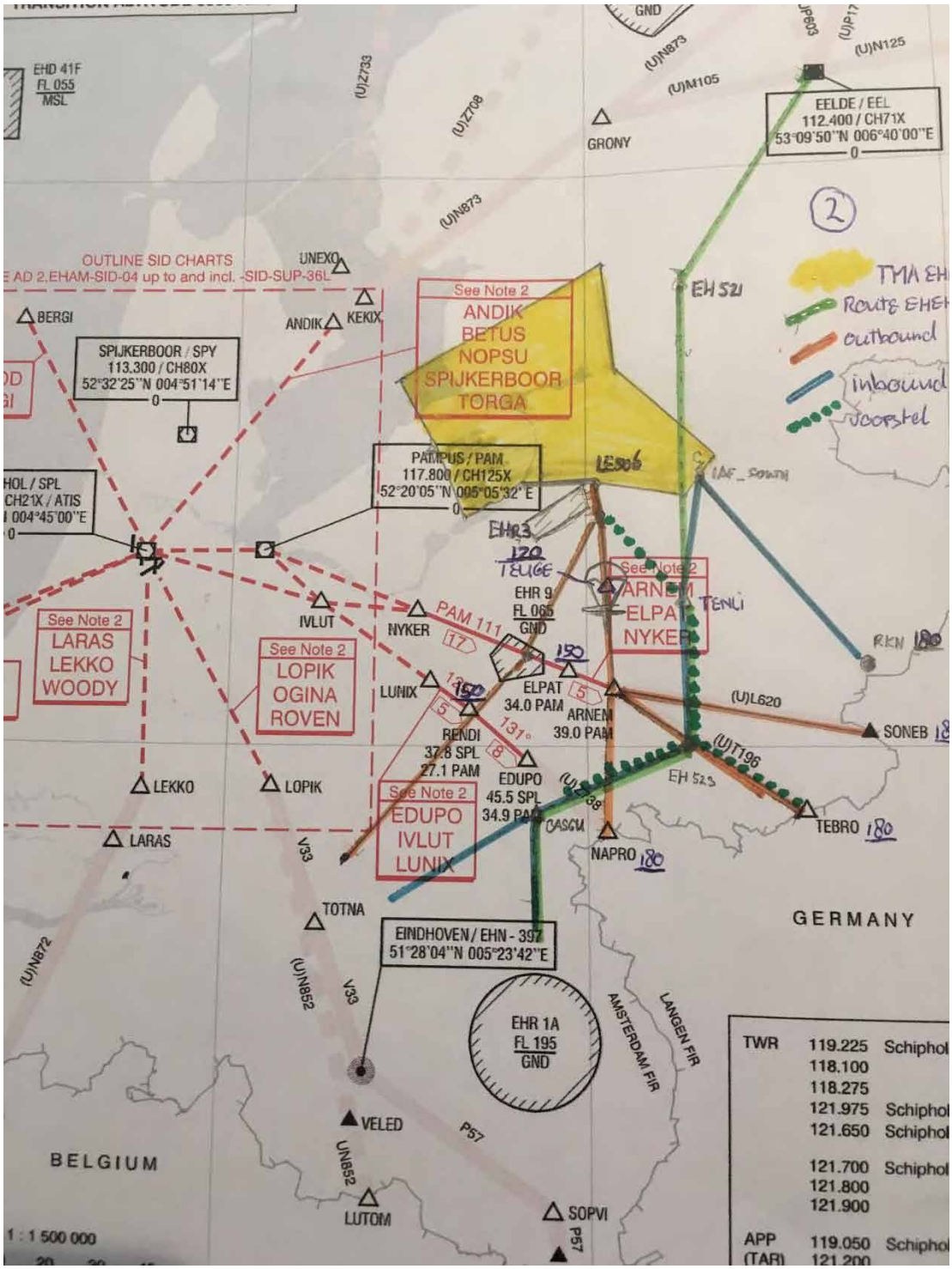
Proposal SGA on conflict area 2

By designing the TMA EHLE according the upside down wedding cake philosophy, it's possible to construct the in- and outbound routes in a more efficient way.

The SGA constructed the following proposals for area 2:

- Assign MCA's for the RNAV points RENDI and ELPAT or ARNEM. We suggest a MCA of FL150 at these points; (note: This altitude is easily manageable with a B777-300 at MTOW with reduced climb thrust departing from RWY 09 at EHAM with standard flying techniques.)
- Change route OUT-2 towards OUT-7 till RNAV fix RAKIX before turning onto the departure route via the airway to ARNEM;
- Change Route OUT-2; from the departure fix LE506 towards the RNAV point TENLI to pick-up the airway between EHGG and EHEH, including connection onto airway (U)T196 to TEBRO;
- Create a RNAV fix TEUGE, preferably at the North line of the present jumping area and define a MCA of FL120. Another option is to make this route a conditional route/airway, only available when there is no parachute jumping taking place;
- Advantages are:
    - By designing the TMA EHLE with multi-stages at higher altitudes the newly defined MCA's are easily feasible;
    - By designing the TMA EHLE with multi-stages at higher altitudes it is possible to descent with an optimal profile from the German border onto the final approach at EHLE;
    - Airspace in CTA Amsterdam is created by defining MCA's along the SID routes from Schiphol without capacity reduction; (note: this is a pure paper issue as there are no operational consequences as the altitudes are easily feasible with standard flying techniques)
    - The MCA of FL180 at the German border is easily feasible outbound EHLE without interference with outbound traffic from Schiphol;
    - Airspace underneath the SID routes outbound Schiphol is suitable to accommodate all other air traffic, especially in- and outbound EHLE;
    - Optimization of descent and climb profiles are possible resulting in less environmental impact;
    - All activities of the Dutch National Parachute jumping Centre can remain at the present location, securing the future of Teuge airfield;
    - The acceptance by the citizen living underneath the routes is more likely.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52°20'05"N 005°05'32"E
LE506
IAF_SOUTH
EHR3
120
TELIGE
EHR 9
FL 065
GND
See Note 2
ARNEM
ELPAT
NYKER
TENLI
IVLUT
NYKER
PAM 111
17
See Note 2
LARAS
LEKKO
WOODY
See Note 2
LOPIK
OGINA
ROVEN
LUNIX
150
ELPAT
34.0 PAM
ARNEM
39.0 PAM
RKN 180
(U)L620
SONEB 18
RENDI
37.8 SPL
27.1 PAM
131°
EDUPO
45.5 SPL
34.9 PAM
(U)T196
EH 523
LEKKO
LOPIK
See Note 2
EDUPO
IVLUT
LUNIX
CASCU
NAPRO 180
TEBRO 180
LARAS
V33
TOTNA
GERMANY
EINDHOVEN / EHN - 397
51°28'04"N 005°23'42"E
(U)N872
(U)N852
V33
EHR 1A
FL 195
GND
AMSTERDAM FIR
LANGEN FIR
VELED
P57
UN852
BELGIUM
LUTOM
SOPVI
P57
1 : 1 500 000
TWR 119.225 Schiphol
118.100
118.275
121.975 Schiphol
121.650 Schiphol
121.700 Schiphol
121.800
121.900
APP 119.050 Schiphol
(TAR) 121.200

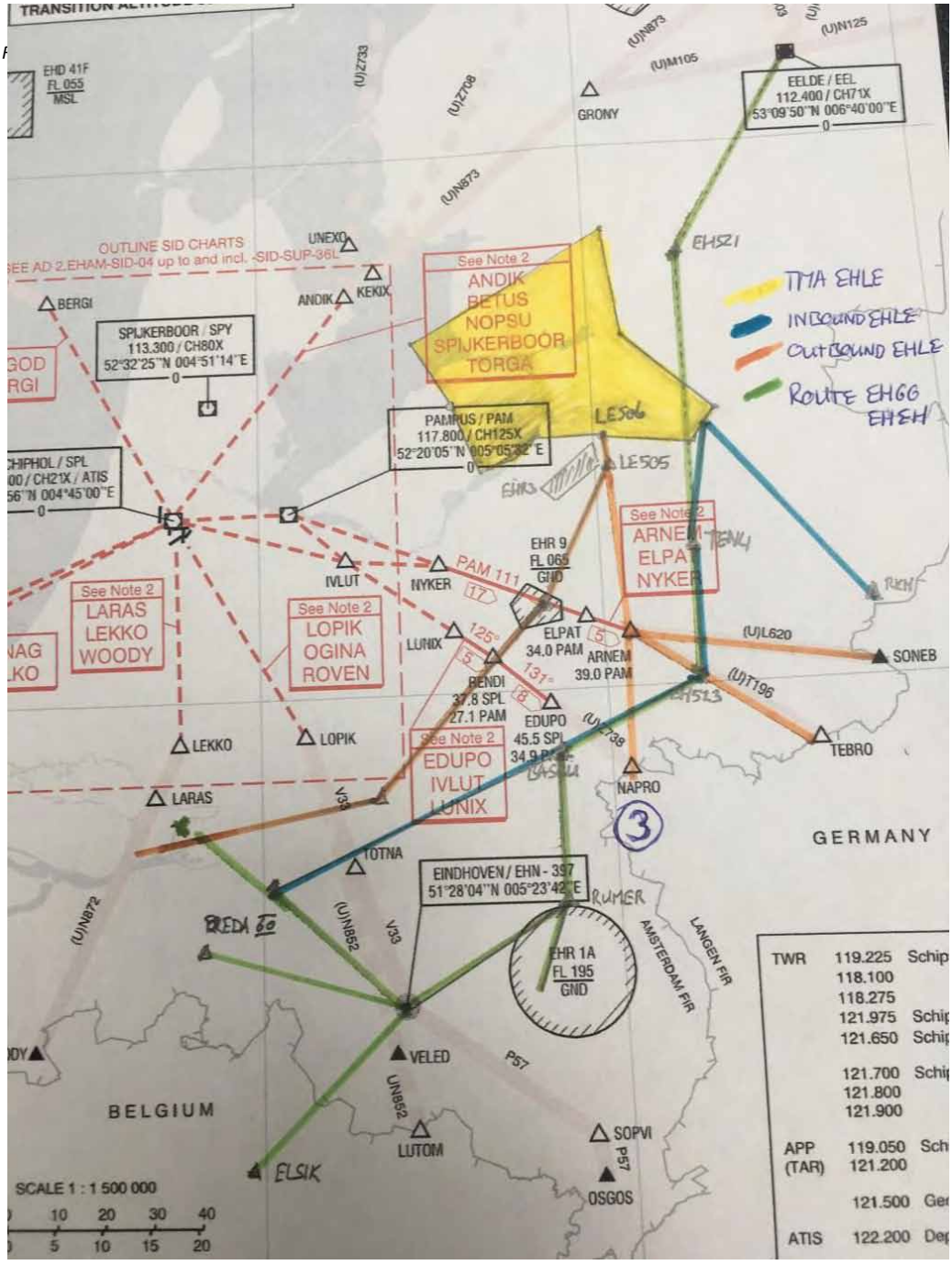
Concern SGA around conflict area 3

Air traffic above Southern Netherlands is complex due to the combination of civil and military airspace at higher levels. Also air traffic numbers bound for EHEH is increasing. Besides this all, you need to find a connection onto the Brussels area which is one of the most busy airspaces in the world.

Observations of the Study Group Airspace KNVvL

- Air traffic will have to fly along routes OUT-7, OUT-2 and IN-6 through Nieuw Millingen TMA D with a lower level of FL65 and higher level of FL195
- Within TMA Nieuw Millingen a TRA-12 and TRA-12A are situated, military exercise areas.
- All airways but one (UN852 via LOPIK to LNO) are one-way airways.
- There are not many options on connecting routes inbound the Netherlands arriving from the South.
- It is not clear at what level Brussels control accepts Dutch outbound air traffic.
- Route IN-06 is connected to a Southbound only airway UN872 via WOODY.
-

14. *I*

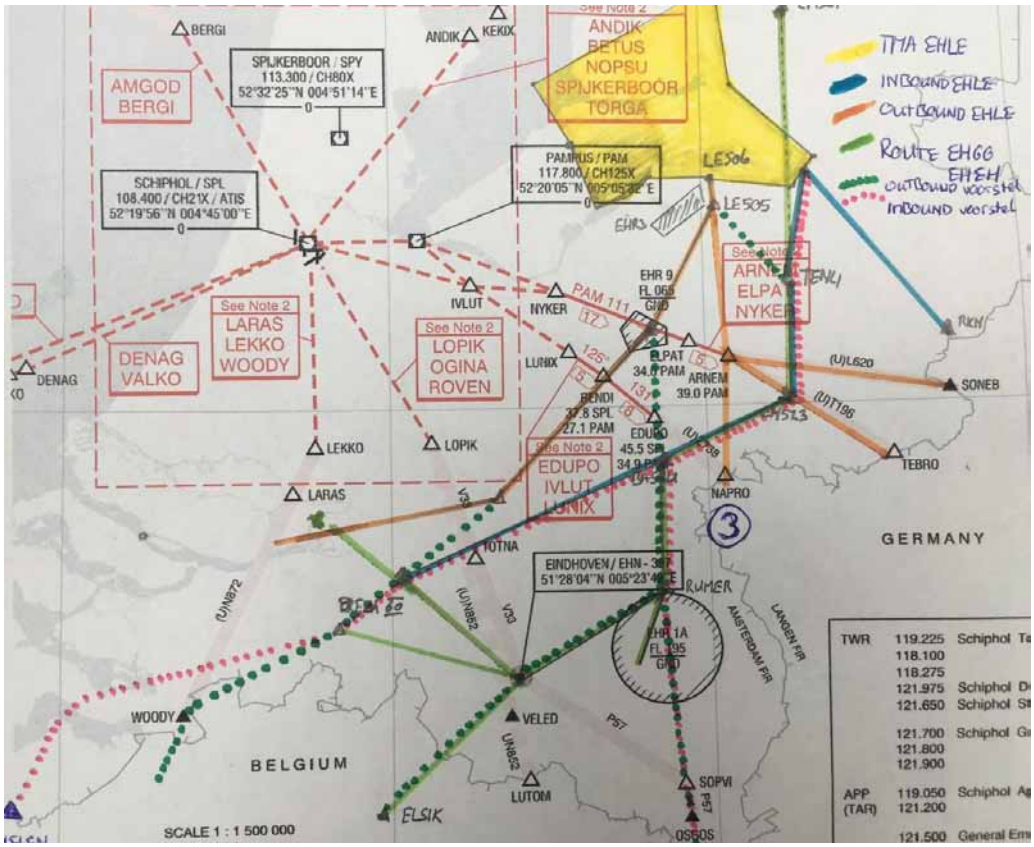


Proposal SGA on conflict area 3

When you accommodate air traffic in area 2 at an higher altitude it´s possible to connect those traffic in an early stage onto already existing airway´s, thus creating efficiency and less influence on MME.

SGA has the following recommendations:

- Connect route OUT-7 at an higher altitude onto the existing WOODY departure outbound EHEH (and EHAM)
- Create an outbound route via OSGOS onto the OLNO departure outbound EHEH, via RNAV points RUMER and SOPVI.
- Design route OUT-7 via overhead EHEH to join the ELSIK departure outbound EHEH.
- Connect inbound route IN-06 onto inbound boundary point HELEN.
- Create an inbound route via the South via the OLNO arrival to EHEH to connect via RNAV points OSGOS, RUMER and BASGU onto the regular route.
- This creates the following advantages:
    - More options, less peak traffic
    - More and better options to connect onto the airways in an early stage.
    - Less interference with the MME.
    - More options to accommodate an optimized flightpath without interference of the existing air traffic.



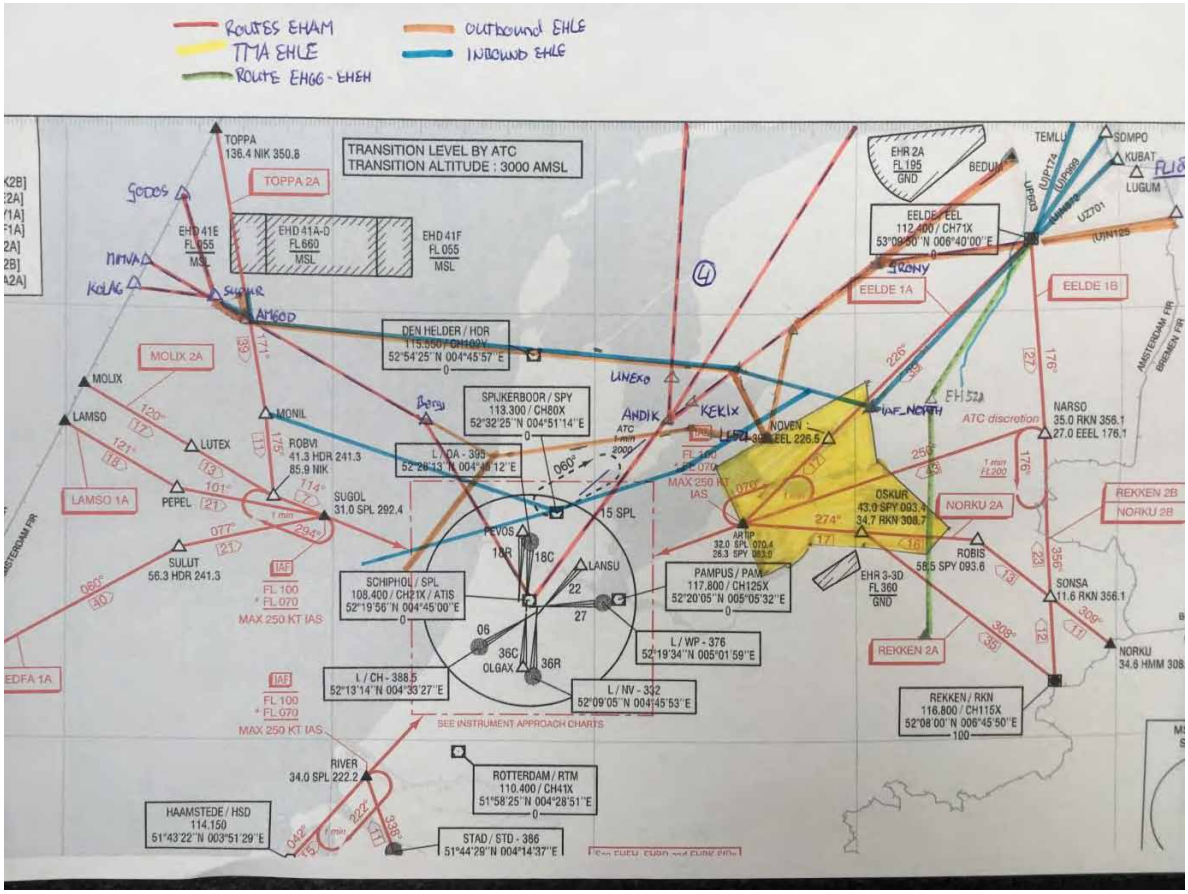
15. routes proposal area 3

Concern SGA around conflict area 4

North of EHLE TMA there is inbound and outbound traffic from Schiphol. There is a lot of “vectoring” of air traffic in the airspace north of Schiphol. There is a military route overhead the “Ijsselmeer” towards the shooting range at Vlieland. Inbound and Outbound traffic of EHLE needs to be accommodated through these routes. Fortunately there is still some capacity left for the air traffic controllers in this area to guide extra traffic.

Observations of the Study Group Airspace KNVvL

- The route proposal is crossing all kind of traffic above the Provence of North-Holland.
- The routes IN-11 and OUT-12 are projected the same and at the same altitude, it is unclear if this is a maximum altitude;
- Routes IN-13 (A&B) are constructed at a realistic altitude along Schiphol through the Schiphol TMA;
- There is a very sharp turn projected in the route IN-11 and IN-13 at IAF_NORTH;
- Approaching and departing traffic to the North via the points EEL and GRONY are via existing routes without interference with other traffic (due to geographic distance between the two airfields);
- No altitudes are defined for route OUT-10 via ANDIK and DENAG;
- It’s unclear when air traffic can resume their climb above FL60 on route OUT-1;



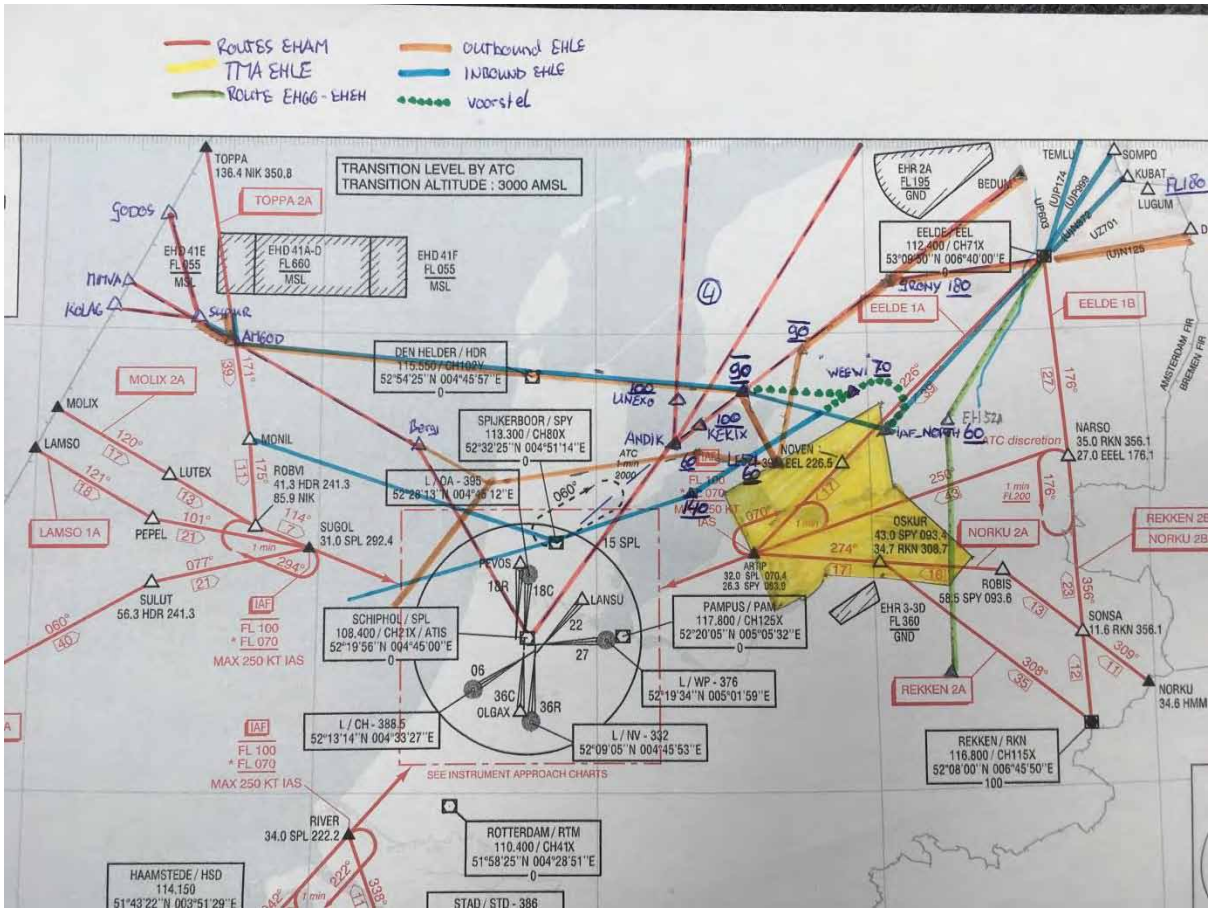
16. Routes north above the Netherlands, area4

Proposal SGA on conflict area 4

According LVNL and CLSK the area above the Northern part of the Netherlands is the area with the less problems on capacity. Inbound route IN-13 is created to accommodate traffic when two military areas in the northern part are in use.

The proposals of the SGA are:

- Develop an ARC procedure on the IN-11 and IN-13 with enough altitude to accommodate a CDA onto IAF_NORTH;
- Define a MCA on the departure routes of Schiphol via SPY and ANDIK. The SGA recommends a MCA of FL100 at the RNAV points UNEXO and KEKIX;
- Define a MCA at GRONY of FL180
- In doing so:
    - Creating space to accommodate optimized flight profiles
    - Creating an ARC onto IAF_NORTH makes the route and profile more predictable for airliners and air traffic controllers
    - It is possible to facilitate the minimum flying altitudes on routes OUT-10 and OUT-12 at an higher altitude, in doing so there will be less interference with Schiphol traffic;
    - It is possible to climb on route OUT-01 with the optimum flight profile.



17. Proposal area 4

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