Cleaner, quieter and more economical

Reaction KLM Group in consultation Balanced Approach Schiphol

Royal Dutch Airlines

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Unofficial translation

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transavia

Martinair

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1. Summary

1.1 Introduction

(1) In the Netherlands, we are facing a major challenge that will continue to occupy us all over the coming decades: to make our country greener and cleaner. That is why we also want to reduce noise hindrance for people living near Schiphol. Koninklijke Luchtvaart Maatschappij N.V. (**KLM**), KLM Cityhopper B.V., Transavia Airlines C.V. and Martinair Holland N.V. (**KLM Group**) wants to contribute to this, now and in the future.

(2) In this context, the Ministry of Infrastructure and Water Management (the **Ministry**) launched the consultation on the Balanced Approach procedure for Schiphol Airport on 15 March 2023. For this purpose, the document "*Consultation of Stakeholders Balanced Approach Procedure Schiphol*" (the Consultation Document) was published, together with supporting documents.[1] It is the Ministry's aim to reduce noise hindrance for residents living near Schiphol Airport.

(3) The consultation is part of the process of a Balanced Approach (the **Balanced Approach**) as required by Regulation (EU) No. 598/2014 (the **Noise Regulation**). The Noise Regulation contains regulations for the monitoring and control of noise around (larger) airports in the European Union.[2] Schiphol falls within the scope of the Noise Regulation and is KLM's home base.

(4) KLM Group aims to become one of the most sustainable airlines in the world, both in terms of noise and other emissions, such as CO2. We base ourselves on three categories:

(i) Fleet renewal: New aircraft are cleaner, quieter and more economical. In order to reduce its noise and CO2 emissions, KLM Group has drawn up an ambitious fleet renewal plan. KLM replaced half of its fleet in the last decade and currently operates with a fleet younger than that of Lufthansa and British Airways.

(ii) Efficiency measures in the operation to reduce CO2 emissions: For example, single engine taxiing, weight-saving measures, and streamlining flight routes in consultation with air traffic control.

(iii) *Sustainable Aviation Fuel* (**SAF**): KLM has flown 10% of all global SAF in 2022 and 10% of its global fuel consumption will be pure SAF by 2030.

Sustainability ambitions are explained in the KLM Climate Action Plan 2023.[3]

(5) By continuing to invest heavily in existing and new initiatives, KLM Group is taking major steps in terms of sustainability and improvement of the living environment around Schiphol. KLM Group continues to look for ways to improve this, especially in terms of sound.

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1 A report produced by To70 entitled "*Balanced approach study Schiphol Airport*" dated March 2023, reference 22.171.29 (**Annex A**); A report produced by Decisio and Beelining entitled "*Measuring the cost-effectiveness of noise-mitigating measures for Schiphol Airport*" dated 10 March 2023 (**Annex B**); A report produced by Adecs Airinfra Consultants BV entitled *'Measures relating to night movements at Schiphol – Cost-effectiveness'* dated 25 May 2022 (**Annex C**); A report produced by Adecs Airinfra Consultants BV entitled "*Update regarding night flights at Schiphol in the context of the Balanced Approach procedure*" dated 14 February 2023 (**Annex D**); and an *infographic* originating from the Dutch Ministry of Infrastructure and Water Management entitled "*Working towards a better balance > between aviation and the quality of life*" (the **Infographic** and, together with the Consultation Document, Annex A, Annex B, Annex C and Annex D: The **Consultation Documentation**).

2 More specifically, in line with Article 2(2) of the Dutch Noise Regulation, this involves, "*an airport where more than 50 000 movements of civil aircraft (a movement is defined as take-off or landing) take place per calendar year, based on the average number of movements during the three calendar years preceding the noise assessment*".

3 Available for reference at https://img.static-kl.com/m/7b0b0f3946d5bb53/original/KLM-Climate-Action-Plan-2023.pdf.

(6) KLM therefore fully supports the Minister's intention to improve the living environment of Schiphol. In this "Zienswijze" or report, we substantiate the concrete measures we see to reduce noise hindrance more quickly. These measures are costly, both for the aviation sector and for Dutch society. But we will meet the noise targets of -20% for day, evening and night-time (24 hours) and even exceed the target of -15% for night-time.

1.2 The Balanced Approach procedure

(7) The Balanced Approach procedure is a legal procedure laid down in the Noise Regulation and is also applicable under Annex 16 of the Convention on International Civil Aviation (the **Chicago Convention**) and under certain bilateral aviation conventions with other States. The Balanced Approach was originally developed by the International Civil Aviation Organization (**ICAO**). ICAO has laid down detailed guidance on the implementation of the Balanced Approach (Guidance on the Balanced Approach to Aircraft Noise Management (Doc 9829 AN/451)).

(8) In short, the Balanced Approach procedure prescribes a thorough assessment of all available measures to solve an identified noise problem at a given airport in the most cost-effective way (least cost to society as a whole). This requires the following four steps:

(i) identifying a noise problem and setting a noise target;

(ii) establishing a baseline to determine whether the current measures can solve the identified problem;

(iii) if the baseline shows that this is the case, or that these measures are sufficient to achieve the noise target, no additional measures need to be taken and monitoring will be sufficient; and

(iv) if the baseline shows that there is a noise problem that cannot be resolved by the current measures, additional measures should be considered.

(9) The Balanced Approach has four categories regarding additional measures that Member States can take to address the noise problem:

A. reduction of aircraft noise at source (e.g. fleet renewal);

B. Land-use planning and management (e.g. isolation projects);

C. operational procedures (e.g. better flight routes); and

D. operating restrictions (e.g. capacity reduction).

(10) EU Member States wishing to take noise-related measures should ensure that they consider a combination of available measures in order to identify which measure or combination of measures offers the greatest cost-effectiveness. The measure or combination of measures chosen will not be more stringent than necessary. Operating restrictions should not be applied immediately, but only after the other measures of the Balanced Approach have been considered, as a last resort.

(11) KLM Group endorses the Ministry's intention to further reduce noise for residents living in the vicinity. It is therefore important for both the aviation sector and the residents living near Schiphol that this procedure be conducted diligently and in accordance with the European legal framework (the Noise Regulation) to ensure that all parties will soon have a clear and sustainable perspective. KLM Group notes that the approach and design of the Balanced Approach procedure, as currently

set up by the Ministry, differs from the prescribed procedure referred to in the Noise Regulation. KLM Group notes the following shortcomings, which are fully explained in Appendix 1a and 1b.

(i) the proposed Balanced Approach starts with a goal reasoning based on capacity reduction (see section 2.6);

(ii) the identified noise problem is not based on a correct assessment of the actual noise situation (see section 2.7);

(iii) the noise target set is disproportionate (see section 2.8);

(iv) the reference year and *baseline* were used incorrectly (see section 2.9);

(v) there are several more proportionate and cost-effective measures to achieve the noise targets in a timely manner (see section 2.10); and

(vi) the deadline for achieving the objective is disproportionately short (see section 2.11).

1.3 The preferred alternative: Achieving the objectives through fleet renewal and operational measures

(12) KLM Group is taking major steps in terms of sustainability and improvement of the Schiphol living environment and has done so successfully in the past. The concrete effects of this are visible: Noise level and the number of residents experiencing noise hindrance at Schiphol have been decreasing for years. Investments by KLM Group in cleaner, quieter and more economical fleet will amount to EUR 6-7 billion in the coming years.

(13) KLM Group is aware of and is committed to its broad social responsibility. In addition to the above-mentioned steps in terms of sustainability and improvement of the living environment, KLM Group has joined forces with other sector parties (EasyJet, TuiFly, Corendon, Delta Airlines, Air France, BARIN, NLR and Airbus) to identify possible packages of measures that comply with the Balanced Approach principles. This has led to an alternative package of measures that meets the noise targets set and is more balanced, reasonable and cost-effective for stakeholders. The Ministry's noise targets for the 24-hour period will be met as of November 2026 and at night-time from November 2024.

(14) These measures are divided into four categories:

A. Reduction of aircraft noise at the source:
- *A.1 Further purchase of new, cleaner and quieter aircraft*
- *A.2 Additional financial incentives to discourage noisy aircraft*
- *A.3 Use of quietest aircraft in the night as much as possible*

B. Land-use planning and management
- *B.1 Restart "omgevingsfonds" for projects in residential areas*
- *B.2 Resume insulation program for eligible houses*

C. Operational procedures
- *C.1 Customised departure procedure (NADP2a)*
- *C.2 Improved surveillance and monitoring by ILT*
- *C.3 Working with LVNL to implement other improvements*

D. Operational restrictions (only if categories A, B and C have been considered)
- *D.1 Suitable private jet activity at Schiphol*

A. Reduction of aircraft noise at source

(15) The fleet renewal mentioned above gives the best results. KLM is currently replacing its old aircraft with the latest generation of Boeing 787s and Embraer 195E2's of its fleet. In addition, KLM and Transavia will replace a large part of their European fleet with the A320neo family as from 2024 and Martinair will replace their Boeing 747 cargo aircraft with Airbus A350Fs as from 2026. The noise level of both the A320neo and the A350F is about 50% less than its predecessor, resulting in a significant improvement. Finally, we will decide on the further long-haul fleet renewal this Summer.

(16) Furthermore, Schiphol can investigate further differentiation in airport charges based on noise. This will further encourage airlines to fly quieter aircraft to and from Schiphol Airport.

(17) KLM Group wants to optimise its fleet use. This means that – more than in the past – the deployment of certain aircraft at certain times of the night should be further considered. In concrete terms, this means that KLM Group will deploy its quietest aircraft at night-time. This also means that we need to restructure our network; this makes transfer times and arrival times less convenient and in some cases we will need to use other aircraft for certain destinations. This will also have an impact on the profitability of certain destinations and flights, and our offer to customer will deteriorate as a result.

B. Land-use planning and management

(18) KLM Group considers it important that the environmental fund or "omgevingsfonds" amounting to EUR 70 million will be restarted. The fund provides financial assistance to individuals affected. In addition, the fund can be used to provide partial funding for projects that improve quality and liveability. A new insulation project will also be launched in the short term.

C. Operational procedures

(19) KLM Group has investigated how smarter procedures in the operation can be used to fly quieter. For example, changing the departure procedure will result in much less noise. We can also approach the airport in a different way, meaning that we fly less at lower altitudes. In addition, we see opportunities to redirect flight routes that currently fly over (densely) inhabited areas more frequently due to standard procedures and efficiency reasons. In many cases it is possible to convert both arrival and departure routes as much as possible via the North Sea or less populated (more distant) areas among others. This requires concessions in terms of flight times and procedures as well as commitment from other sector parties such as LVNL, Schiphol and the government, but is in principle easy to achieve leading to a direct reduction of residents experiencing noise hindrance.

D. Operational restrictions (only if categories A, B and C have been considered)

(20) If the measures under categories A, B and C are not sufficient, Schiphol and the Ministry can consider allowing private jet traffic to be carried out within the existing capped number of "groothandelsverkeer" flight movements and transferring the surplus of flights to other airports (D.1). This would be beneficial in several ways.

1.4 If the noise target is maintained as of November 2024

(21) The measures under categories A, B, C and measure D1 will ensure that the noise targets of -20% of residents experiencing noise hindrance during 24 hours are met starting November 2026 and that the noise target of -15% of persons experiencing noise hindrance during the night-time is met from

November 2024. However, the Minister sets a tighter reduction target of 20% for the 24-hour period as of November 2024.

(22) KLM Group beliees that the deadline for achieving the noise target set by the Ministry as of November 2024 is disproportionately short (this is further justified in chapter 2). However, KLM Group also understands the challenge the Ministry is facing and has therefore worked out in detail the preferred alternative described above, which will achieve all objectives in the short term, starting in November 2026. If the Ministry maintains to meet its objectives as of November 2024, additional operational restrictions may be **temporarily** considered as a "last resort in addition to all measures in categories A, B, C and D1:

D. Operational restrictions (only if categories A, B and C have been considered)
D.2 Move night-time flights to times later in the day
D.3 Total capacity reduction Schiphol

(23) Under the Balanced Approach, less disruptive measures should be considered ahead of a firm capacity reduction by way of a lower number of permitted flight movements is considered.

(24) As a last resort, the Ministry can consider moving flights from the night-time to hours later in the day (D.2) in combination with a possible capacity reduction of the total number of flight movements at Schiphol (D.3).

(25) In combination with the measures mentioned under A, B and C and the above-mentioned measure concerning private jets (D.1), the Nederlands Lucht- en Ruimtevaartcentrum (**NLR**) calculated that this implies a possible temporary reduction of the number of total annual flight movements from 500,000 (in total) and 32,000 (night) to 481,000 (in total) and 28,500 (night). However, the cost of this reduction measure is estimated to amount to around EUR 240 million of welfare damage.[4]

(26) The combination of the above will result in a large reduction at night, i.e. 30% less residents experiencing severe noise (and 20% less residents experiencing severe noise hindrance during the 24-hour period. This alternative is therefore more effective and efficient than the proposed Ministry plans, both for residents and airlines.

(27) Potential reduction in the capacity of flight movements should be limited wherever possible and should be **temporary**. If it turns out that the noise targets can be achieved by means of ongoing efforts such as fleet renewal or other measures, the capacity reduction (and other Category D operational restrictions) should be reconsidered. In this way, the aviation industry will be able to achieve better results for residents in the short term and, in the long term, to maintain the network from Schiphol as much as possible, which is used by tens of millions of travellers each year with an important contribution to the Dutch economy. As mentioned above, it will also allow for continued ability to invest in the additional fleet renewal already underway, which is important to further reduce the impact on the living environment in the future.

(28) Finally, KLM Group has no objection against more effective monitoring by ILT of the finally agreed measures and noise targets. This can contribute to regulatory compliance and thus reduce the actual hindrance and the perceived hindrance. If the measures prove insufficient in the long term, KLM Group understands that additional measures may need to be considered.

[4] KLM's analysis of the Decisio/Beelining report – Measuring the cost-effectiveness of noise mitigating measures for Schiphol Airport in the context of the Balanced Approach procedure – Final report, 10-3-2023

(29) All details of the measures described in categories A, B, C, D are explained in more detail in chapters 3 and 4 of this consultation response. KLM Group calls on the Ministry to diligently examine these alternative measures as part of the Balanced Approach procedure.

2. Balanced Approach procedure

2.1 Introduction

(30) In this chapter, KLM Group will first give a brief background on the run-up towards the current Balanced Approach procedure Schiphol. Subsequently, a brief summary of the Balanced Approach procedure as intended by the legislator will be given. Finally, KLM Group will briefly comment on the items where the Balanced Approach procedure Schiphol, as initiated by the Ministry, deviates from the envisaged legal procedure. Detailed and technical considerations regarding these deviations can be found in Appendix 1A and Appendix 1B.

2.2 The importance of a diligent process with constructive dialogue

(31) The development of Schiphol requires continuous attention in order to achieve the right balance with regard to ecological and economic interests and the interests of quality of life and residents. In the Netherlands, about fifteen years ago, the Alderstafel, a consultative body that brought together the various aviation interest groups, was able to strike a balance.

(32) De Alderstafel issued its first opinion in 2008; an indivisible opinion that all the parties who sat at the table, including the government, regional governments and the residents of Schiphol Airport, agreed on. The Alderstafel recommended – after mutual discussions on possible improvements – that a new system of standards and enforcement (**NNHS**) be introduced, which took place from 2010 to 2012. The outcome of the experiment was clear: This system, the NNHS, proved practical and was considered successful by the Ministry and all parties at the Alderstafel. The final opinion of the Alderstafel was included in a legislative proposal in 2015 that was adopted in 2016.

(33) KLM Group emphasises that the greatest possible care has been taken to create the NNHS. Representatives of all stakeholders have been extensively involved in an open and constructive process and have subsequently joined forces to support the opinions of the Alderstafel.

(34) KLM Group calls on the Ministry to work together with the entire sector to look for improvements for local residents while maintaining network quality and taking into account the economy and employment. In view of the diversity of interests, it is crucial for the Ministry to ensure a constructive dialogue and a careful process, as required by law. In doing so, account must be taken not only of national interests but also of international relations, as well as of the European and international legal framework.

2.3 Introduction to the Balanced Approach as required by law

(35) The Balanced Approach procedure is a legal procedure laid down in the Noise Regulation and also applies under Annex 16 of the Convention on International Civil Aviation (the **Chicago Convention**) and under certain bilateral aviation conventions with other States. The Balanced Approach was originally developed by the *International Civil Aviation Organization* (**ICAO**). ICAO has laid down detailed guidance on the implementation of the Balanced Approach (Guidance on the Balanced Approach to Aircraft Noise Management (**Doc 9829 AN/451**)).

(36) In short, the Balanced Approach procedure prescribes a thorough assessment of all available measures to solve an identified noise problem at a given airport in the most cost-effective way (least cost to society as a whole). This requires the following four steps:

(i) identifying a noise problem and setting a noise target;

(ii) forecasting a baseline to determine whether the current measures can solve the identified problem;

(iii) if the baseline shows that this is successful, or that these measures are sufficient to achieve the noise target, no additional measures need to be taken and monitoring will be sufficient; and

(iv) if the baseline shows that there is a noise problem that cannot be resolved by the current measures, additional measures should be considered.

(37) The Balanced Approach has four categories regarding additional measures that Member States can take to address the noise problem:

A. reduction of noise at the source (e.g. fleet renewal);

B. Land-use planning and management (e.g. insulation projects);

C. operational procedures (e.g. better flight routes); and

D. operating restrictions (e.g. night closure or capacity limitation).

(38) Those Member States who wish to implement noise related measures should ensure that they consider a combination of available measures in order to identify which measure or combination of measures offers the greatest cost-effectiveness. The measure or combination of measures opted for should not be more restrictive than necessary. Operating restrictions should not be applied immediately, but only after the other measures of the Balanced Approach have been considered.

2.4 Introduction to the Balanced Approach procedure as initiated by the Ministry

(39) KLM Group notes that the approach and design of the Balanced Approach procedure, as it currently set up, differs from the prescribed procedure as referred to in the Noise Regulation. It is important for both the aviation industry and the residents living in the surrounding of Schiphol that this procedure is followed diligently and correctly and this is also the reason why KLM Group has called for alternatives to be investigated in line with the Balanced Approach.

(40) KLM Group believes that the Ministry is right to use the Balanced Approach as an instrument to reduce noise. The Balanced Approach procedure as it is currently ongoing differs from the statutory and applicable principles. KLM Group notes the following deviations:

(i) the proposed Balanced Approach starts with goal reasoning based on capacity reduction (see section 2.6);

(ii) the identified noise problem is not based on a correct assessment of the actual noise situation (see section 2.7);

(iii) the noise target set is disproportionate (see section 2.8);

(iv) the reference year and *baseline* were used incorrectly (see section 2.9);

(v) there are several proportionate and cost-effective measures to achieve the noise targets in a timely manner (see section 2.10); and

(vi) the deadline for achieving the objective is disproportionately short (see section 2.11).

(41) KLM Group will further comment on these criticisms below, but refers to Appendix 1a for a detailed explanation and to Appendix 1b for additional technical comments.

2.5 The proposed Balanced Approach starts with goal reasoning based on capacity reduction

(42) Operating restrictions should not be applied immediately, but only after the other measures of the Balanced Approach have been considered. The Balanced Approach procedure is now being followed, but the measures are not considered in the right order and in the way intended by the Union legislator. On 24 June 2022, the Ministry announced in the "Hoofdlijnenbrief Schiphol" that a reduction had been decided long before the Balanced Approach was launched. The noise target was published more than eight months later by means of the Consultation Document. However, even later, as of 16 May 2023, it was made possible by means of a consultation on the Schiphol 2018-2023 action plan to react to the noise target in the Balanced Approach Schiphol. Not only does this sequence run counter to the way in which the Noise Regulation prescribes it, but the identified noise problem as well as the target seem to be motivated by the desire to introduce an operating restriction by means of a capacity reduction.

2.6 The actual noise situation was incorrectly assessed when identifying the noise problem.

(43) The noise problem and the noise target should be determined pursuant to Directive 2002/49/EC, taking account of the action plans of the Member States. The most recent action plan for Schiphol is the Schiphol Action Plan 2018-2023, which does not identify a clear noise problem. KLM Group does not deny that air travel can cause noise hindrance in the immediate vicinity of Schiphol Airport. However, there is no clearly substantiated quantification of the noise problem.

(44) According to the Noise Regulation, the noise situation is to be assessed using a methodology developed in accordance with European Civil Aviation Conference Report Doc 29 entitled "Standard Method of Computing Noise Contours around Civil Airports", 3th Edition (Doc 29). In terms of "Milieu Effecten Rapportage (MER)" 2016 on the effects of the quieter start-up and landing procedures (NADP2 and CDAs) at Schiphol, the m.e.r. Commission noted in particular that the Dutch calculation rule for the determination of noise hindrance differs from more current international calculation rules and studies. The m.e.r.. Commission, in particular, then strongly insisted on the application of Doc 29. At the time, the State Secretary for Infrastructure and the Environment also requested the use of Doc 29 for the MER2016. In addition, use forecasts for Schiphol are also established based on Doc 29. If the noise situation were assessed on the basis of Doc 29, a decreasing trend would have been identified in terms of both the residents experiencing severe hindrance and residents disturbed in their sleep. Instead, the charts in the Consultation Document are based on the NRM calculation model and NRM data, which are no longer up-to-date. Calculations on Doc 29, on the other hand, show a positive development in terms of hindrance reduction.

2.7 Use of noise hindrance perception in the Balanced Approach for Schiphol

(45) Based on the Consultation Document, the assessment of the current noise situation appears to be based in particular on a study by the GGD on noise hindrance perception. This study is only of limited use. In addition to the fact that this research is about subjective experience, according to the researchers themselves, the perceived noise hindrance is coloured by the corona pandemic. Residents were more at home during this period and, after years of relative silence, may have experienced additional noise hindrance from the air traffic starting up again. The report shows that, in addition to the corona pandemic, there are other factors that influence the level of noise and disturbance of sleep caused by air traffic. Nevertheless, the Consultation Document has formulated a far-reaching noise target based on noise perception as established in the GGD study. This indicator is not sufficiently transparent and cannot justify decisive measures taken at high speed.

2.8 The noise target set is disproportionate

(46) The Consultation Document sets out reductions of 20% for the 24-hour period and 15% for the night-time as noise targets. These noise targets are proposed to be achieved as of November 2024. This is very different from the envisaged timing of noise targets used abroad, but also from the targets set for Schiphol in the past. For example, an annual reduction of 2% of residents experiencing severe noise hindrance was adopted as a target in 2020. The (additional) reductions of 15% to 20% as a noise target are disproportionate. Moreover, there is no clear and quantitative justification for a noise target which now includes a reduction that is three to four times higher to be implemented in the very short term.

2.9 The reference year and baseline were incorrectly applied

(47) The reference year is the starting point. A change in the noise situation is measured against the reference year. This can only be done if all relevant data are available for the reference year on the noise situation in that year, based on a comprehensive assessment. This situation can subsequently be used as a benchmark for the noise target to be set. For example, in the case of a Balanced Approach carried out in 2023, the noise situation in 2022 can be taken as the starting point and it will be possible to calculate that a noise hindrance reduction of a certain percentage will have been achieved by 2030 compared to 2022. However, the impact of Covid-19 should also be taken into account when selecting a specific reference year. From this perspective, the 2018 operating year strikes KLM Group as the most representative reference year to take as a starting point.

(48) The method of using the reference year and baseline described above is in line with the Balanced Approach procedures that have been completed for London, Paris and Dublin (see Table I in Appendix 1).

(49) The reference year can therefore not be fixed in the future. No data are yet available for November 2024 (and year of use 2025) and no assessment of the current noise situation can have been performed. In addition, the noise target is also to be achieved by November 2024, which means that the period from the baseline actually runs to the reference year and autonomous developments will not contribute to the outcome in November 2024. Instead, the noise target will continue to shift.

2.10 The combination proposals from the Ministry considered disproportionate measures unnecessarily quickly

(50) Pursuant to the Balanced Approach as required by the Noise Regulation, measures within the first three categories, as described in paragraph **Error! Reference source not found.**, offer the greatest cost-effectiveness should be considered first. Only if they do not provide a solution should an operating restriction, the fourth category, be considered.

(51) The Consultation Document finally presents three combinations of measures. These measures are not cost-effective and, except for combination D, have a significant overshoot. The proposed measures can neither be performed together.

(52) Appendix 1A contains detailed comments and Appendix 1B contains technical comments on the three combinations.

(53) Finally, KLM Group points out that there are more proportionate and cost-effective alternatives available. These alternatives have been set out above and are discussed in more detail in chapters 3 and 4. In doing so, KLM Group will draw a comparison, where useful, with the measures envisaged by the Minister, including their practicability.

2.11 The deadline for achieving the objective is disproportionately short

(54) The Balanced Approach must logically present a reasonable period between the reference year and the deadline for achieving the noise target in order to adequately take account of autonomous developments. In any case, the period should be such as to take account of changes in the fleet mix, the longer duration of land-use planning around airports and other factors. During the ICAO General Meetings, it has always been emphasised that noise is a common problem and that solutions must be long-term. Baseline analysis should consider improvements over a period of five to ten years. It is therefore logical to use a period of five to ten at least between the reference year and the deadline for achieving the noise target.

(55) This is in line with the way the Balanced Approach has been carried out in recent years for several European airports such as Heathrow (in London, UK), Charles-de-Gaulle (Paris, France) and Dublin (Ireland). Whereas the (far-reaching) reduction for Schiphol must be achieved within a time frame of less than one and a half years, the period at the other airports covers five to ten years.

3. The preferred alternative: Achieving the objectives through fleet renewal and operational measures

3.1 Introduction

(56) KLM Group endorses the Ministry's intention of taking action to improve the environment around Schiphol. KLM Group acknowledges the challenges relating to nitrogen, (ultra-fine) particulate matter, noise hindrance and the quality of the human environment that the government, the aviation sector and society face. In this context, the sector, including KLM Group specifically, has an important role to play in achieving a proper balance taking into account environmental and economic interests and the interests of local residents. KLM Group believes that these challenges can only be solved through cooperation.

(57) KLM Group has read the Consultation Documentation with interest. The Consultation Document indicates that the Ministry intends to reduce noise hindrance primarily through a capacity reduction. However, KLM Group is convinced that the proposed capacity reduction is not the most reasonable, balanced and cost-effective approach for improving the noise situation.

(58) Finding the most cost-effective and least intrusive measures to achieve the noise targets is a key objective of the Balanced Approach procedure. Indeed, the Noise Regulation explicitly stipulates:

> "*The measures or combinations of measures implemented pursuant to this Regulation for a specific airport shall not be more restrictive than is necessary to achieve the environmental noise reduction objectives set for that airport. Operating restrictions shall be non-discriminatory; specifically, they shall not be based on nationality or identity, and shall not be arbitrary.*"[5]

(59) A further key stipulation of the Balanced Approach is that "*operating restrictions should not be applied in the first instance, but only after the other measures of the Balanced Approach have been considered*".[6]

(60) KLM Group has attempted to follow the Balanced Approach as effectively as possible, according to the applicable principles. For the different categories of measures, it has been assessed how the set objectives can be achieved in the most cost-effective and operationally feasible way.

(61) Broad cooperation between the parties involved is essential for successfully following the Balanced Approach. This is the only way to achieve the objectives with correct and optimal consistency, and in the most proportionate and cost-effective way. Against this background, KLM Group (KLM, Transavia, Martinair) has looked at solutions in a broad context. The parties involved in the search for more proportionate and cost-effective measures were the Dutch home carriers (Easy)et, TuiFly, Corendon), Delta Airlines, Air France, BARIN, NLR and Airbus.

(62) Around 50 measures have been identified in measure categories A to C, some of which overlap with the measures published by To70. The potentially most impactful measures are discussed below. All the calculations to determine hindrance reduction as a result of the measures have been carried out by NLR and can be found in more detail in Appendix 3.

(63) LVNL has not yet been involved in the assessment of alternative (combinations of) measures. However, the feasibility of some measures needs to be verified by LVNL. On the basis of an initial assessment from the perspective of the expertise of the parties involved, the alternatives considered appear feasible and effective. For this purpose, a more extensive assessment was carried out by the parties involved than that carried out by aviation consultancy To70 at the

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5 Noise Regulation, Article 5(6).
6 Noise Regulation, Article 5(3)(d).

Ministry's instruction. However, it is up to the Ministry to define and document the exact way in which the measures should actually be implemented.

3.2 Category A. Limiting aircraft noise at source

A.1 Fleet renewal

(64) The assumption under the Balanced Approach, as implemented by the Ministry, is that autonomous fleet development will result in a noise reduction of 0.1 dB for landings and 0.2 dB for take-offs.[7] This assumption is based on historical facts. So this development reflects a trend in flight movements, but has not been corrected for a situation of capacity reduction. In the event of a capacity reduction, it can be assumed that this autonomous development will no longer be achieved because it will have a negative impact on earning capacity and therefore also on the level of investment that is possible. This will slow the rate of fleet renewal. This is an important factor when looking at future fleet development.

(65) However, KLM Group believes that the actual impact of autonomous fleet development in terms of hindrance reduction will be much more significant. This is because KLM Group has invested heavily in fleet renewal and, where possible, seeks to speed up the inflow of the new aircraft into the fleet. If this development is compared with the assumptions regarding autonomous fleet development, it can be noted that KLM Group is doing more to develop the fleet than inferred under the assumption. This results in an additional reduction in hindrance.[8] In addition to the positive contribution in terms of hindrance, this also has a positive impact on cost-effectiveness through lower operational costs and lower CO2 emissions. This measure should therefore form the basis of the Balanced Approach procedure.

A.2 Differentiation in airport charges

(66) Each of the three combinations of measures proposed by the Ministry relies on differentiation in airport charges for take-offs and landings (LTO). This is only applied in the proposals to noise segment 1 (S1). It is correct that this measure will only lead to a direct change in fleet deployment in the case of inbound airlines.
Many flights at Schiphol are also performed in S2. For this class, a good alternative is also available in the form of S6 and S7. Stronger fee differentiation can be used to increase the fee burden for S1 and S2 and to reduce the fee burden for S6 and S7. The 48% discount for freight operators, regardless of the noise class, could also be dropped. This would provide an additional strong incentive to use quieter aircraft for cargo operations. Not all airlines will change their fleet as a result. KLM Group estimates that these measures relating to airport fee differentiation are likely to result in a change in the case of roughly 33% of the flights. So KLM Group's estimation of this percentage is much more conservative than Ministry's estimate of 65%.

(67) Schiphol recently also added a NOx surcharge. The expectation is that Schiphol will want to further tighten this. This would reduce the noise component in the airport charges. In general, the aircraft in S6 and S7 emit less NOx. So application of the measure in a different way will also achieve a positive effect in terms of hindrance reduction.

(68) As already concluded by the government, the measure involving stronger fee differentiation has a positive effect on the reduction of hindrance. The proposed extension to S2 would make the measure even more effective. Contrary to the Decisio/Beelining assessment, in addition to the

7 To70 22.171.29 – March 2023 – Balanced approach study Schiphol Airport – Final report
8 Appendix 3.

reduction in hindrance, cost-effectiveness will also receive a positive boost through lower operating costs and lower CO2 emissions.

A.3 Using the quietest aircraft at night

(69) In relation to this measure, we examined what the impact of optimising the fleet for night operations will be. In this scenario, the quietest aircraft, if reasonable and feasible from an operational point of view, will be operated at night instead of the current optimisation based on operating results. For example, the quietest aircraft, i.e. an Airbus 321-NEO instead of a Boeing 737-800, will be scheduled during the night, but also, where operationally possible, intercontinental flights will not be scheduled during the night and are replaced by quieter European flights. KLM Group and partners operate around 88% of the night slots. So the impact will be primarily determined by members of our own group. KLM Group is ready to commit to applying this measure voluntarily. Other airlines have also assessed this measure positively.

(70) When applying this measure, the hindrance at night is significantly reduced, which also results in a significant improvement of hindrance during the 24-hour period. However, due to the reduced optimisation during the night, the measure will have a negative impact on cost-effectiveness and business results.

3.3 Category B. Land-use planning and management

(71) Due to the method for calculating hindrance, this category of possible measures will not contribute to the achievement of the set objectives. However, KLM Group considers that measures in this category should be considered, as they definitely help reduce the perceived hindrance. These measures include, for example:

B.1 Continuation of the environment fund, capital injection of 70 million

(72) KLM strongly supports continuing the environment fund with a capital injection of EUR 70 million, financed by Royal Schiphol Group. The environment fund provides financial assistance for individuals who are adversely affected. In addition, the environment fund can be used to provide partial funding for projects that improve quality and quality of life.

B.2 Continuation of housing insulation projects

(73) Schiphol has implemented by far the largest insulation programme compared to other European hub airports. The total cost of implementing the three phases together was approximately EUR 575.3 million. The airlines mostly paid for the large-scale noise insulation projects that resulted in the insulation of no less than 13,279 homes. A new insulation project will be launched shortly. Although the projects have a significant impact on the perceived hindrance and limitation of the hindrance, these projects are not included in the counts of the number of severely hindered individuals and homes. Nevertheless, KLM Group believes that housing insulation is a highly effective way of reducing noise hindrance.

3.4 Category C. Operational procedures for combating noise hindrance

KLM Group has assessed several operational measures that could further reduce noise hindrance. Below is an overview of these measures and the assessment by KLM Group. It is important to note that LVNL will still have to carry out an implementation test before entry into force to determine whether the measures envisaged are actually feasible.

C.1 Optimise take-off procedures

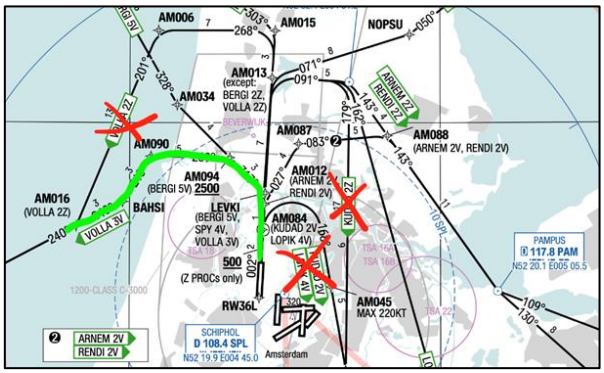
(74) Currently, take-off procedures are performed in several ways. Some of the aircraft departures at Schiphol Airport are carried out in accordance with NADP1 and others according to NADP2. Within NADP2, various acceleration heights apply. For the greatest reduction in hindrance, an acceleration height of 800 feet gives the best result. Making NADP2 mandatory in the AIP and including a preference for an acceleration height of 800 feet will result in this procedure being used by almost all airlines. When BARIN questioned member airlines on this point, they indicated that 800 feet is not seen as an obstacle. An additional advantage is that a higher capacity can be achieved through adoption of a uniform procedure. This creates opportunities for LVNL for further optimisation.

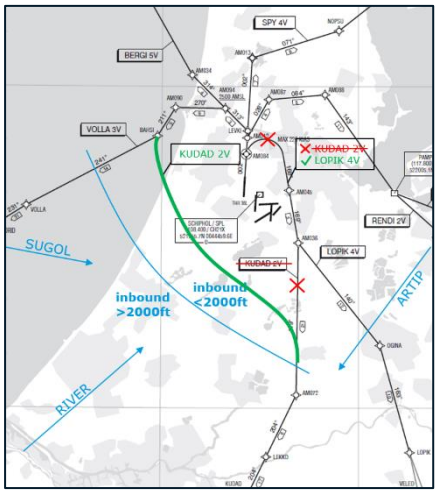
(75) In particular, the measure ensures a significant reduction in severely hindered people and people suffering sleep disruption. Application of the NADP2-800 foot procedure will reduce fuel consumption, thereby having a positive impact on operational costs and also reducing CO2 and air-polluting emissions.

C.2 KUDAD2V (day) and KUDAD2Z (night) flight paths to the left between 11pm and 7am

(76) The 'KUDAD2V' (day) and 'KUDAD2Z' (night) take-off flight paths are used by aircraft departing from the Polderbaan runway between 11pm and 7am. These take-off flight paths route the aircraft traffic across Amsterdam and Amstelveen, among other places. The 'KUDAD2z' take-off flight path is a flight path that crosses the areas of Amsterdam and Amstelveen, among others. Many residential areas are avoided by redirecting these routes via the North Sea and Schiphol. This measure will significantly reduce the number of severely hindered people and people suffering sleep disturbance. An illustration of the possibilities is outlined below.

(77) Changing this route will require LVNL to start an implementation procedure. Due to this dependency, this measure has not been taken into account. However, it is expected that this measure will score very positively in terms of hindrance reduction and cost-effectiveness.



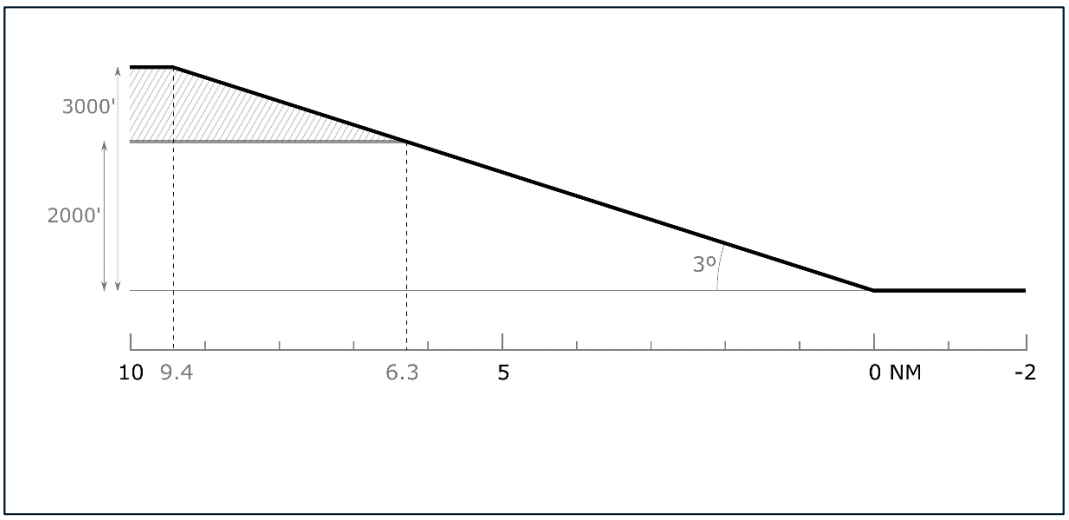


(78) The LOPIK 4V flight path will continue to follow the original route.

C.3 Increase in the ILS approach height

(79) At present, the ILS approach height is set at 2000 feet and, in parallel approaches, at 2000 feet and 3000 feet respectively. Raising the ILS approach height will significantly reduce hindrance as the aircraft will continue to fly at higher altitudes for longer. To increase this height, LVNL will have to start an implementation procedure. This dependency has prevented this measure from being taken

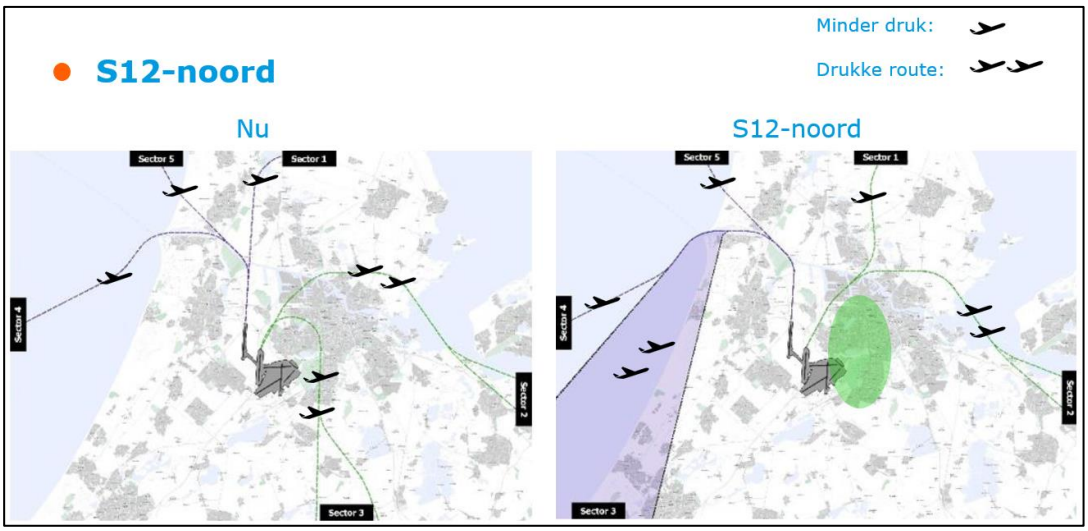
into account. This measure will be very positive in terms of reducing hindrance and in terms of cost-effectiveness.



C.4 Change to S12 North departure procedures

(80) A lot of hindrance can be avoided, especially in the inland area, by allowing traffic to depart on other northern routes towards sectors 1 and 2. The figures below globally outline this change.

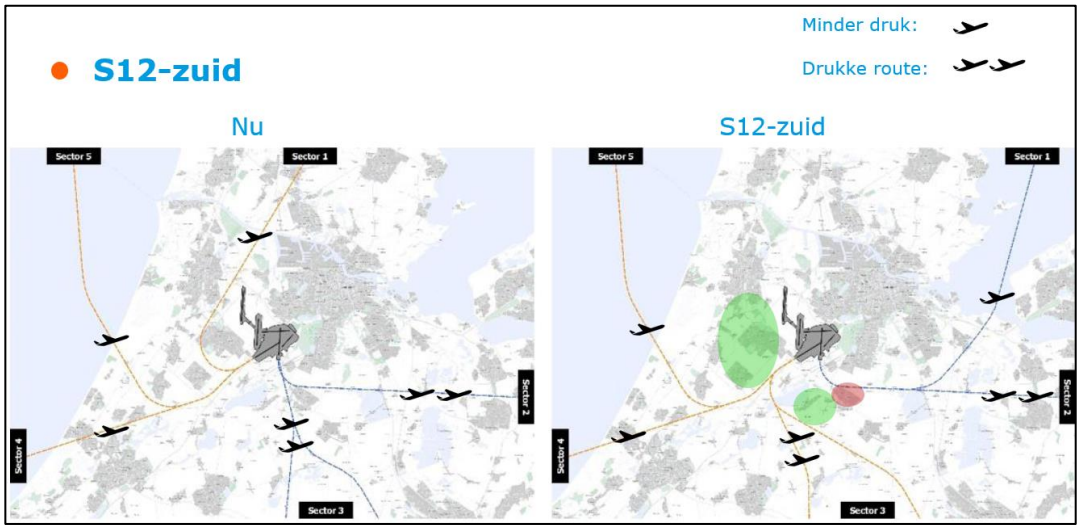
(81) It is expected that this measure will lead to a significant reduction in hindrance.[9] A negative effect is a small increase in flight time, which means that this measure does have a slight impact on operational costs. To change the departure procedures, LVNL will have to start an implementation procedure. This dependency has prevented this measure from being taken into account. This measure will be very positive in terms of reducing hindrance and in terms of cost-effectiveness.



[9] https://kdc-mainport.nl/2022/12/29/traffic-segregation-concepts/

C.5 Change to S12 South departure procedures

(82) A lot of hindrance can be avoided, especially in the inland area, by allowing traffic to depart on other southern routes towards sectors 1 and 2. The figures below globally outline this change.



(83) This measure will lead to a significant reduction in hindrance.[9] A negative effect is a small increase in flight time, which means that this measure does have a slight impact on operational costs. To change the departure procedures, LVNL will have to start an implementation procedure. This dependency has prevented this measure from being taken into account. However, it is expected that this measure will score very positively in terms of hindrance reduction and cost-effectiveness.

C.6 Landing on runway 24 instead of 27 in the night

(84) Significant reductions in hindrance can be achieved by having some aircraft touch down on runway 24 rather than runway 27 at night, especially when this is worked out on a seasonal basis. This is expected to have hardly any impact on operations or emissions, so this measure seems very cost-effective (cheaper for society). The LVB allows landing on runways 24 and 27 at night provided that none of the other runways is available or usable[10]; no order of preference is specified in this respect. This measure is in line with the NNHS. Runway 24 currently has an appropriate RNP arrival procedure. Runway 24 will be used in mixed mode and LVNL will have to start an implementation procedure for this. Due to the dependency on LVNL, this measure has not yet been taken into account in the analysis.

C.7 Increase the ILS approach angle to 3.25 degrees

(85) The approach angle specified in the ILS approach procedures is currently 3.00 degrees at Schiphol. This angle can be increased to 3.25 degrees, without ruling out the possibility of landing automatically in conditions of poor visibility and low-level clouds. A steeper approach angle means that aircraft will fly higher and use less engine power. Flying higher with less engine power will result in a hindrance reduction. The feasibility will have to be assessed by LVNL and therefore this measure has not been taken into account further.

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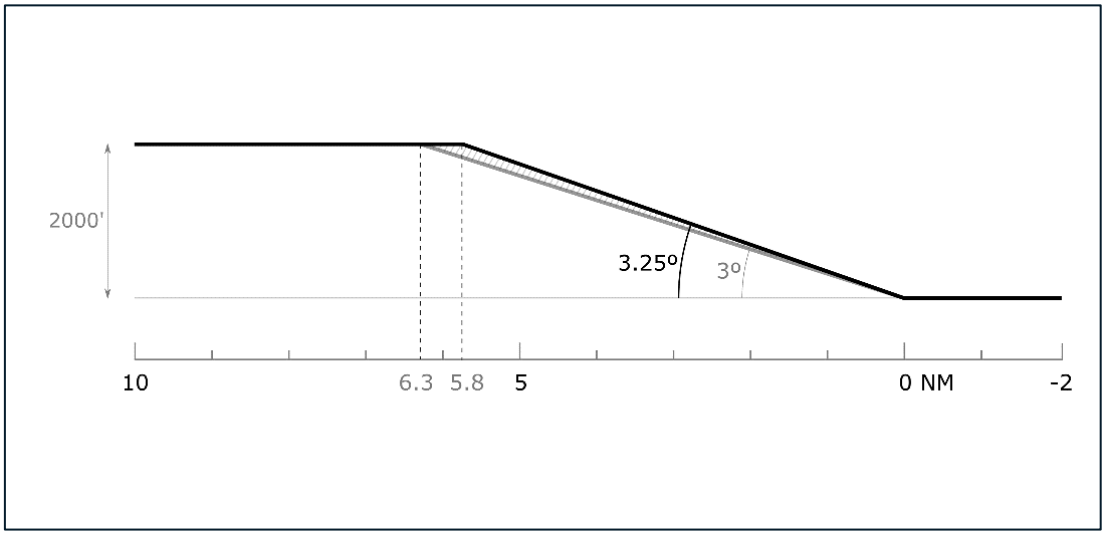
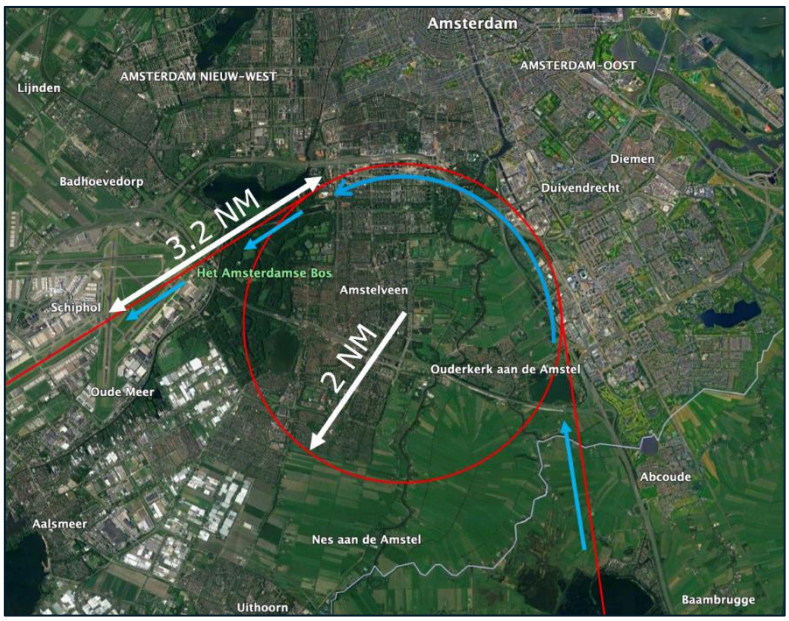
10 Airport traffic decision Schiphol Article 3.1.5(5)



C.8 RNP-AR: optimisation of arrival procedures

(86) When applying arrival procedures by means of RNP-AR, various residential concentrations can be spared, which in turn can lead to a reduction in hindrance. An RNP-AR route is shown as an example in the figure below. A large proportion of aircraft must be fitted out with this equipment in order to apply this. At the moment, that number does not seem sufficient. However, in the longer term, this can be a very effective measure.



C.9 Default CDA procedure RWY18C and RWY06

(87) This measure has been added as an autonomous development in the Ministry's Consultation Document. This measure can be applied when the airspace redesign is implemented in 2026. We see the benefits of this measure, provided that capacity is not reduced. However, due to the stated dependency, it is not realistic to expect that this measure can enter into force from November 2024. From this point of view, this measure is not eligible and cannot be taken into account in the autonomous developments.

C.10 Reduced Flaps approach procedure

(88) This measure has been added as an autonomous development in the Ministry's Consultation Document. This is a procedure that some airlines are already applying. From a safety and operational point of view, it is unlikely that a specific standard that each airline has to comply with can be stipulated. A request to use this procedure can be incorporated in the AIP, and this may lead to a hindrance reduction. However, it cannot be expected that it will be applied generically, so this measure is not applicable in this context and cannot be taken into account in the autonomous developments.

C.11 Extending the night regime

(89) In the Balanced Approach, two applications for extending the night regime have also been worked out. If this measure is applied without capacity loss and delays, it would appear to be a positive measure. However, if the operational capacity is significantly reduced, it will result in unworkable operations. In fact, only two runways are used in the night regime, which means that less capacity is available. Many flights will be delayed in the evening due to a lower available capacity, which means that such a flight will take place at night. If the night is extended between 6.40am and 7am, the flights will take place in the early morning. The effect of this measure is to increase the number of night flights and early morning flights and hence the hindrance. As a result of this measure, the hindrance will increase by more than 10% in the night, which will also have a negative impact on the total 24-hour period. As a result, the measure goes from positive to very negative. In addition, operational costs and emissions will increase as a result of the delay that this will cause. As a result, the cost-effectiveness will be affected negatively to a much greater extent than the assumptions made by Decisio/Beelining. On the basis of the above, this measure has been discarded.

C.12 Partial closure of runway 09/27 (Buitenveldertbaan)

(90) In terms of reduction of hindrance, this measure appears to be very favourable. However, on the basis of initial studies, this measure does not seem feasible within the context of sufficient capacity. This should be further investigated by LVNL as part of the feasibility assessment. This measure will also lead to a higher usage of other secondary runways, which will increase hindrance. On the basis of these points, this option does not qualify as a measure worthy of implementation.

C.13 Decrease the use of secondary runways

(91) Reducing the use of secondary runways will reduce the hindrance. However, this measure also seems not feasible. The description of the measure in the Ministry's Balanced Approach analysis refers to a previous investigation.[11] However, on the basis of this report, no conclusion can be drawn that a secondary runway can actually be closed during the designated periods. If this were to happen, there would be very undesirable operational deficits, which would have consequences for other periods and additional secondary runway usage later in the day.

Reducing secondary runway use in combination with increasing peak hourly capacity on primary runways might be feasible. It is up to LVNL to take this into account in its feasibility assessment.

C.14 Increase cross wind limits

(92) Increasing the cross-wind limits allows longer usage of the primary runways, resulting in a reduction in hindrance. However, from a safety point of view, there are limitations to this and this measure has therefore not been taken into account further.

[11] https://open.overheid.nl/documenten/ronl-19c051ae1b78522e03f4fc15a2a04cdbc973c7f2/pdf

C.15 Change to S34 departure procedures

(93) By rescheduling sector 3 departures to sector 4, more departures are planned on the primary runway instead of the secondary one. This reduces the number of hindered people. A major disadvantage is on the operational side, as for many flights the flight time would increase by 15 minutes. This results in a large operational impact and a high commercial opportunity cost. In addition, emissions from the longer flight time also increase significantly. In this context, this measure does not sufficiently qualify for further inclusion in the measures.

C.16 Use of 24/18C+18R runway combination outside UDP instead of 18L/18C+18R.

(94) Runway 18L is used in a landing peak outside the uniform daylight period (UDP). A hindrance reduction is achieved by using runway 24 for take-off traffic. The measure can be extended by using runway 24 instead of 18L for take-off traffic even in the case of marginal visibility. This measure imposes many constraints on operational capacity, which can be expected to have a high impact on the operations and cost-effectiveness. The feasibility of these measures should also be assessed by LVNL. This measure has been discarded for this period, also in combination with the current capacity.

3.5 Analysis of measures in categories A1, A2, A3 and C1 of the preferred alternative

(95) Measures C2 to C16 have not been selected for this analysis, as they require a feasibility assessment by LVNL (and are therefore outside the span of control of KLM Group or other home carriers). Category B measures have not been included in the analysis as noise reduction is difficult to quantify for these measures (however, KLM Group believes that these measures can be effective).

(96) KLM Group estimates that the following hindrance reduction will be achieved by applying the immediately implementable measures A1, A2, A3 and C1 as of November 2024:

	Achieved	Target
Severely hindered people 48 dB(A) Lden	-11.9%	≤ -20%
Homes 58 dB(A) Lden	-9.3%	≤ -20%
People suffering severe sleep disturbance 40 dB(A) Lnight	-14.8%	≤ -15%
Homes 48 db(A) Lnight	-20.3%	≤ -15%

(97) Without additional measures, the target set by the government for the entire 24 hours will not be achieved. For the night, this package already contains sufficient measures.

(98) The operational measures C2, C3, C4, C5, C6 and C7 seem to be so effective that implementation of these measures is likely to achieve both objectives (24 hours and night) from November 2024. However, this requires a feasibility assessment by LVNL first. The objectives can be significantly exceeded if measures C8, C9, and C10 are also implemented. Based on the implementation of the Balanced Approach and looking at the most cost-effective measures, it is necessary to launch a feasibility study for these additional measures before considering category D measures.

(99) In KLM Group's view, if the aforementioned measures in categories A, B and C are indeed insufficient for achieving both of the noise targets immediately from November 2024, this does not necessarily mean that an operating restriction should be implemented as a *last resort* remedy. After all, it is clear that the objectives can still be achieved without additional measures in the medium term. This is mainly due to the effects of the continuous fleet renewal, in which both KLM Group and its partners and the other home carriers are investing billions of euro's. KLM Group points out that the ICAO Guidance is also based on the longer term.[12] If the Balanced Approach procedure is correctly applied, this measure will be observed and the noise target (as in the case of other airports) can be achieved in the medium term. The Ministry can use a combination of measures from categories A to C inclusive and then, in accordance with the Noise Regulation,[13] does not need to go to the lengths of imposing an operating restriction.[14]

3.6 Category: Operating restrictions (only after categories A, B and C have been considered)

D.1 Regulating private jets within mainstream commercial traffic

(100) At present, General Aviation traffic (**GA**) operates on top of the volume of mainstream commercial traffic. GA clearly applies for slots but does not acquire historical rights in respect of those slots. GA can be divided into two categories: 1. "Societal Traffic (**ST**); 2. Private jets (**PJ**). The first category (ST) consists mainly of helicopter traffic and the coast guard. Due to the function of ST, it is not advisable to restrict such traffic. However, route usage and location can still be looked at in order to reduce the hindrance. This measure applies to the second category PJ. The PJ category could ideally operate within the remaining capacity of the non-historical volume of mainstream commercial traffic. As a result, the possibility to operate at Schiphol will remain, but the available volume will be smaller than in the current situation. The overflow can be operated from regional airfields, with Lelystad Airport as the preferred airfield.

(101) PJ traffic mainly flies over the inland area. As a result, this measure will significantly reduce the hindrance. The operational costs will increase, but the impact will be small due to the type of traffic and the availability of alternatives. This measure therefore appears to be the most cost-effective measure within category D (see also chapter 4 for a further analysis of measures in this category).

3.7 Analysis of measures A1, A2, A3, C1 and D1 of the preferred alternative (achieving the objectives through fleet renewal and operational measures)

(102) KLM Group estimates that the following hindrance reduction will be achieved by applying the immediately implementable measures A1, A2, A3, C1, in combination with the most cost-effective measure D1, as of November 2024:

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12 See margin number **Error! Reference source not found.**.
13 Article 5, paragraph 3, Noise Regulation.
14 This should not be more restrictive than necessary, as Article 5(6) of the Noise Regulation states.

	Achieved	Target
Severely hindered people 48 dB(A) Lden	-14.8%	≤ -20%
Homes 58 dB(A) Lden	-14.3%	≤ -20%
People suffering severe sleep disturbance 40 dB(A) Lnight	-18.1%	≤ -15%
Homes 48 db(A) Lnight	-23.2%	≤ -15%

(103) Without additional measures, the noise targets of the Ministry will be met for the entire 24-hour period as of November 2026 and in the night from November 2024 (see Appendix 3). As indicated in chapter 2, KLM Group considers that the year chosen by the Ministry for achieving the objectives is disproportionately early. In view of the fact that the above package of measures (A1, A2, A3, C1 and D1) already meets the Ministry's noise targets as of November 2026, KLM Group calls on the Ministry to diligently examine this package as part of the Balanced Approach procedure. If required, we will be happy to explain further the proposed measures in this preferred alternative in discussions with the Ministry.

4. Our alternative if the noise target is maintained as from November 2024

4.1 Introduction

(104) Only if the above measures are deemed insufficient and/or not feasible and, contrary to the principles of the Balanced Approach procedure, and the Ministry is not prepared to allow a longer period for achieve the objectives, further operating restrictions could be considered to achieve the set noise objectives. The following describes the various possible measures investigated by KLM Group.

4.2 Category D. Further operating restrictions (after considering A, B and C and D1)

D.2 Night volume reduction

(105) A reduction in the night volume can be a very effective measure to reduce hindrance during the night and the total 24-hour period. However, this measure is subject to constraints in terms of feasibility. If the number of night slots is reduced, they must be moved to the day and evening. Under the current EU slot regulation (no. 95/93), it is not possible to remove only night slots from the slot pool.

(106) Sufficient slots are needed in order to move these night slots to the day (in logical combinations). However, this availability is very limited. This will quickly make the measure less cost-effective (more expensive for society) in the event of a significant reduction, as the allocation of slots during the day will be less efficient due to the need to place more slots. If more than 5,000 night movements have to be shifted out of the night, additional measures are needed during the day and evening. These should then be sought in solutions such as increasing peak hourly capacity and opening Lelystad Airport with a sufficiently wide operating window. But there are also limitations to this, and implementation procedures will likely extend beyond 1 November 2024.

D.3 Reduction of total 24-hour volume

(107) Reduction in the 24-hour volume and thereby a decrease in the number of slots will lead to significant economic and commercial damage, and thus will have a major impact on the cost-effectiveness of this measure. In order to minimise these negative effects, it is necessary to keep the capacity reduction as limited as possible. In any case, reducing the number of flight movements below the current historical slot level is not desirable. A reduction in capacity should also be **temporary** and should be abandoned as soon as the noise targets can also be achieved by fleet renewal or other measures.

(108) The number of hindered people will decrease as a result of a reduction measure. But in terms of cost-effectiveness, this is an expensive measure in the package. A decrease to the historical level of slots issued has a limited impact on cost-effectiveness, but will increase exponentially if reduced to below this level. This package takes into account the historical slot level as a measure.

(109) A reduction in aircraft movements should take into account that new entrants and other airlines would be prevented from flying (more) at Schiphol and that retaliation from other countries can then be expected. The risk of retaliation will certainly increase significantly as airlines suffer losses in their networks and the number of slots is reduced. After all, they are then cut off from the Dutch market (to a greater extent).

(110) KLM Group sees a clear threat of such retaliation from various foreign airlines and governments. The capacity reduction is seen internationally as a distortion in the inter-state balance when allocating traffic rights. A balanced and reciprocal commitment to make and keep their own airports available to each other's airlines may no longer exist in the eyes of foreign airlines and governments. This is despite the fact that the capacity reduction in absolute terms will have the greatest adverse impact

on KLM Group. This leads to a risk of retaliation by other countries, such as withdrawing or limiting overflight and/or landing rights. Various governments have already shown that they are prepared to take such actions in the past if insufficient opportunity for operations is offered at Schiphol. Other sectors outside aviation may also be affected by retaliation. The recent JetBlue complaint to the US Department of Justice shows that capacity reduction also causes competition-based complaints about a distorted market balance and lack of access. The capacity reduction can lead to a further negative impact on KLM Group in this way as well.

(111) If retaliation does take place, it will have a direct negative impact on the operational result and the operations of KLM Group. In addition, retaliation will also have a direct and indirect impact on the Dutch economy. These effects have not been quantified in the cost-effectiveness analysis, but should be considered as having a potentially significant impact.

D.4 Introduce a Night Curfew

(112) In the case of a night curfew, operations during part of the night is forbidden. However, this measure does not have any positive effect on reducing hindrance and may even increase perceived hindrance. The effect of this measure is that many flights will be moved to the edges of the night period, which will increase the perceived sleep disturbance. The GGD study cited by the Ministry states that the most hindrance is experienced between 6am and 7am (and between 10pm and 11pm).[15] In addition, this measure is very costly for airlines and will therefore have a very large business impact without any positive effect, and may even lead to suspension of operating activities. For these reasons, this measure has not been applied.

D.5 Ban on *full freighters* during the night

(113) Due to the higher weight of cargo aircraft, they cause more noise emissions than passenger aircraft. From this point of view, a measure could be to stop this type of operation during the night. However, the EU's slot regulation, as well as paragraph 6 of the Balanced Approach state that a rule may not be discriminatory. This also applies to a specific slot pool for a particular type of traffic. Consequently this measure has not been considered, and could only be applied on a voluntary basis and/or by means of incentives through airport charges. This is in fact implemented through measure A2.

D.6 Ban of aircraft with a certain noise margin

(114) A measure that restricts operations may also include a ban on noisy aircraft. A proposal for the introduction of such a ban is already being prepared at EU level. Anticipating and diverging from EU policies in this area can lead to geopolitical side-effects such as retaliation, in addition to undesirable effects from an EU perspective. In addition, such a measure may affect *home carriers* in particular, which cannot immediately switch to a different type of fleet. Due to this possibility of a discriminatory effect, the measure has not been taken into account. It is possible, however, that airlines will voluntarily respond to the desire to operate as quiet a fleet as possible, on the basis of the new fee differentiation mentioned in A2.

4.3 Analysis of further measures in category D of the alternative if the targets must be met from November 2024

(115) The noise targets are not yet met by the package of measures in the preferred alternative (see also chapter 3), which means that measures in categories D2 and D3 would need to be considered. NLR has identified through iterations what reductions would be needed for the day and the night.

[15] GGD GHOR Nederland, Belevingsonderzoek geluidhinder en slaapverstoring luchtvaart 2020, page 45.

Assuming application of the measures mentioned previously in Chapter 3 (A.1, A.2, A.3, C.1 and D.1), NLR has iteratively calculated that the noise targets of the Ministry could be met as of November 2024 if the total flight movements at Schiphol airport were reduced by 19,000 to 481,000 (D2/D3) and by 3,500 to 28,500 (D2/D3) during the night:

	Achieved	Target
Severely hindered people 48 dB(A) Lden	-21.2%	≤ -20%
Homes 58 dB(A) Lden	-20.7%	≤ -20%
People suffering severe sleep disturbance 40 dB(A) Lnight	-30.3%	≤ -15%
Homes 48 db(A) Lnight	-36.0%	≤ -15%

(116) All targets are achieved, with the night reaching 2x the target and the 24-hour period slightly above the target. The set target metrics have a relationship with each other (Lnight is included in Lden). This makes it impossible to achieve exactly all targets, and targets will always be exceeded (specifically Lnight in this case). The slightly higher restriction on Lden leaves a small buffer to absorb marginal differences (if measures are not as effective as expected).

(117) Finally, KLM Group notes that because it holds the vast majority of the current night slots, it will be more affected than other airlines by a measure that *retimes* night slots to the day. Due to the need for proportionality and non-discrimination in the imposed noise reduction measures, it is necessary to look at compensation arrangements for airlines that are hit disproportionately more than others.

(118) The calculations of NLR are explained in more detail in chapter 3.

4.4 Cost-effectiveness & conclusion (preferred alternative and the alternative if the targets must be met from November 2024)

(119) An estimation of the cost-effectiveness (total cost to society) has been made based on the package of measures considered, in line with the Decisio/Beelining[16] calculations and internal business data.

(i) For the measures in categories A, B and C and measure D1, the cost-effectiveness calculations result in an annualcost of approximately EUR 24 million;

(ii) If the measures in category D are added, the impact on society as a whole would be around EUR 244 million.

(120) This is presented in the following table[17]:

KLG-voorstel	Total costs (mln €)	Highly annoyed people within 48 dB(A) Lden		Houses within 58 dB(A) Lden		Sleep disturbed people within 40 dB(A) Lnight		Houses within 48 dB(A) Lnight	
		Impact	CE (€ per person)	Impact	CE (€ per house)	Impact	CE (€ per person)	Impact	CE (€ per house)
A1. Aanschaf nieuwe, schonere en stillere vliegtuigen (bovenop autonome ontwikkeling)	56	-3.2%	15,296	-2.8%	281,089	-1.7%	134,549	-1.8%	544,619
A2. Extra financiële prikkel tegen luide vliegtuigen via luchthaventarieven	-72	-2.6%	-24,321	-2.1%	-484,193	*0.1%*	*2,955,058*	*0.6%*	*2,110,818*
A3. Zoveel mogelijk de stilste vliegtuigen inzetten in de nacht	-5	-1.2%	-3,659	-1.9%	-37,164	-7.4%	-2,773	-13.5%	-6,515
C1. Optimaliseren vertrekprocedures (NADP2a)	2	-4.3%	408	-0.9%	31,383	-5.2%	1,579	-3.3%	10,661
D1. Vluchten met privévliegtuigen reguleren binnen groot handelsverkeer	-5	-3.2%	-1,372	-3.3%	-21,397	-3.2%	-6,413	-3.9%	-22,551
D2. Reductie totaal aantal vliegtuigbewegingen tot 481.2k (zonder nachtreductie)	-200	-3.8%	-46,224	-3.4%	-830,723	0.0%	-	0.0%	-
D3. Reductie aantal vliegtuigbewegingen in de nacht tot 28.5k	-20	-3.3%	-5,323	-3.4%	-83,072	-14.1%	-5,822	-16.0%	-21,988
Alle KLG-maatregelen	**-244**	**-21.2%**	**-10,119**	**-20.7%**	**-166,649**	**-30.3%**	**-33,087**	**-36.0%**	**-119,354**

16 Decisio/Beelining – Measuring the cost-effectiveness of noise mitigating measures for Schiphol Airport in the context of the Balanced Approach Procedure – Final report, 10-3-2023

17 Measure B1 is not included in this overview as there is no cost-effectiveness impact

(121) On the basis of this table, it can be concluded that the measures in categories A, B and C and measure D1 score significantly better than any measure proposed by the Ministry. This also applies when operating restrictions are added. In line with the Balanced Approach rules, the only possible conclusion is that the combinations of measures proposed by the Ministry in the Consultation Document are clearly not the most cost-effective for society and not the most efficient. The alternatives proposed above should be fully considered as part of the Balanced Approach procedure.

Impactweergave van de voorgestelde maatregelen

Ter overweging voor het Ministerie
0 Behoeft nadere studie door LVNL, RSG, luchtvaartmaatschappijen of ACNL

	Mogelijke maatregelen[2]	Haalbaar in 2024[3]	Geluids-reductie	Uitvoerbaarheid[1]	Behoud kwaliteit van het netwerk	Maatschappelijk voordeel
A | Beperking van vliegtuiggeluid aan de bron	A.1. Vlootvernieuwing bovenop de autonome ontwikkelingsaanname	+	+	+	+	+
	A.2. Sterkere havengelddifferentiatie en stoppen korting voor vrachtoperators	+	+	+	+	+
	A.3. Inzet van de stilste vliegtuigen in de nacht	+	+	+	+	+
B | Ruimtelijke ordening en beheer	B.1. Herstart "leefbaarheidsfonds" dat projecten financiert in residentiële omgevingen (€ 70M totaal, uit RSG niet-luchtvaartbudget)	+	0	+	+	+
	B.2. Herstart woningisolatie-projecten	+	0	+	+	+
C | Operationele procedures voor bestrijding van geluidshinder	C.1. Optimaliseren vertrekprocedure (NADP2)	+	+	+	+	+
	C.2. KUDAD2V (dag) en KUDAD2Z (nacht) tussen 23:00 en 07:00 linksaf	0	+	+	+	+
	C.3. Verhoging ILS naderingshoogte	0	+	+	+	+
	C.4. Veranderen van S12 Noord vertrekprocedures	0	+	0	+	+
	C.5. Veranderen van S12 Zuid vertrekprocedures	0	+	0	+	+
	C.6. Landen baan 24 in plaats van 27 in de nacht	0	+	+	+	+
	C.7. Verhogen van de ILS-naderingshoek naar 3,25 graden	0	+	0	+	+
	C.8. RNP-AR: optimalisatie aankomstprocedures	0	+	0	+	+
	C.9. Default CDA-procedure RWY18C en RWY06	–	+	–	+	+
	C.10. Reduced Flaps aankomstprocedure	–	+	–	+	+
	C.11. Verlenging nachtregime	0	+	–	–	–
	C.12. Gedeeltelijke sluiting runway 09/27 (Buitenveldertbaan)	0	0	–	–	0
	C.13. Verlagen gebruik secundaire banen	0	0	–	–	0
	C.14. Verhogen dwarswindlimieten	0	+	–	+	+
	C.15. Veranderen van S34 vertrekprocedures	+	+	–	–	+
	C.16. Baancombinatie 24/18C+18R buiten UDP inzetten in plaats van 18L/18C+18R	0	+	–	+	+
D | Exploitatie beperking (nadat A, B en C zijn overwogen)	D.1. Privéjets binnen groot handelsverkeer reguleren	+	+	+	+	+
	D.2. Reductie totaal etmaalvolume	0	+	–	–	+
	D.3. Reductie nachtvolume	0	+	–	–	+
	D.4. Instellen Nachtcurfew	0	–	–	–	0
	D.5. Verbod op Full Freighters gedurende de nacht	–	+	–	+	+
	D.6. Verbod op vliegtuigen met een bepaalde geluidsmarge	–	+	–	–	+

1. Gelet op vereiste operationele inspanning en kosten
2. Veiligheid is niet als aparte dimensie gecategoriseerd omdat het als randvoorwaardelijk geldt voor alle voorgestelde maatregelen
3. Voor C3,4,5,6,11,12, 15 dient een uitvoerbaarheidstraject te worden opgestart vanuit LVNL

Bron: NLR & KLM

4.5 Monitoring compliance with measures and commitments

(122) KLM Group has no objection to more effective inspection by ILT of the measures that are finally agreed upon, and the set noise targets. This can contribute to regulatory compliance and thus reduce the actual hindrance and the perceived hindrance. This applies to both the preferred alternative and the alternative if the noise targets must be met from November 2024. The same applies to more regular monitoring of measures. The annual "Gebruiksprognose" or "usage forecast" and the quarterly analyses will make it possible to regularly assess whether the targets are being met. This can be done before, during and after the end of the "Gebruiksjaar" or operational usage year. If instances of imminent exceedance become apparent, KLM Group believes additional measures should be considered and taken.

5. Conclusions

5.1 Conclusions

(123) The Netherlands faces major challenges in the coming decades, which will require everyone to help make our country greener and cleaner. At the same time, we want to ensure quieter conditions for people living near airports. By continuing to invest heavily in both existing and new initiatives over the years, KLM Group has taken major steps when it comes to sustainability and improving the living environment around Schiphol. KLM Group continues to look for improvement possibilities, especially when it comes to noise. KLM Group therefore fully supports the Minister's intention to improve the living environment near Schiphol.

(124) Therefore, it is important to the aviation sector and the people who live near Schiphol that this procedure is conducted diligently and in accordance with the European legal framework (the Noise Regulation), so that all parties have a clear and sustainable perspective in the short term. KLM Group notes that the approach and process of the Balanced Approach procedure, as currently set up by the Ministry, differs from the prescribed procedure referred to in the Noise Regulation. KLM Group calls on the Ministry to adopt the comments and suggestions in this consultation response and to go through the Balanced Approach procedure in a correct manner. When doing so, KLM Group would like to reiterate the importance of a constructive dialogue between the Ministry, its officials, the aviation sector and the surrounding. Only by working together will it be possible to develop sustainable solutions with broad support among the various stakeholders.

(125) KLM Group is aware of and is committed to its broad social responsibility. Besides the above-mentioned steps concerning sustainability and improvement of the living environment, KLM Group has therefore joined forces with other (sector) parties (easyJet, TUIfly, Corendon, Delta Airlines, Air France, BARIN, NLR and Airbus) to look for possible measures that comply with the principles of the Balanced Approach. This has led to an alternative package of measures that meets the noise objectives and is more balanced, reasonable and cost-effective for stakeholders. This package of measures will help to achieve the Ministry's the 24-hour period noise targets as of November 2026 and the night-time targets from November 2024.

(126) These measures are divided into four categories:

A. Reduction of aircraft noise at the source:
- *A.1 Purchase new, cleaner and quieter aircraft*
- *A.2 Additional financial incentive against loud aircraft via airport charges*
- *A.3 Maximise deployment of the quietest planes at night*

B. Land-use planning and management
- *B.1 Restart environment fund of EUR 70 million*
- *B.2 Resume housing insulation program*

C. Operational procedures
- *C.1 Customised departure procedure (NADP2a)*
- *C.2 Improved surveillance and monitoring by ILT*
- *C.3 Working with LVNL to implement other improvements*

D. Operational restrictions (only if categories A, B and C have been considered)
- *D.1 Appropriately sized private jets at Schiphol*

(127) However, the Minister has set a stricter reduction target, whereby the the 24-hour period noise targets also need to be met as of November 2024. KLM Group is of the opinion that a disproportionately short period of time has been given to meet the Ministry's noise targets by November 2024. However, KLM Group also understands the challenge posed by the Ministry and

has therefore developed the preferred alternative described above, which will also achieve all objectives in the short term, as of November 2026. If the Ministry insists on meeting both the the 24-hour period and night-time targets as of November 2024, then **temporary** additional operational restrictions can, in addition to all measures in categories A, B and C, as well as measure D1, also be considered as a 'last resort':

D. Operational restrictions (only if categories A, B and C have been considered)
D.2 Move night-time flights to times later in the day
D.3 Total capacity reduction Schiphol

(128) A combination of the measures above (A, B, C and D) will lead to a major reduction at night as of November 2024, i.e. 30% fewer severely sleep disturbed people (and 20% fewer people hindered by noise during the day). This alternative is therefore more effective and efficient than the proposed Ministry plans, both for residents and airlines.

(129) Potential reduction in the capacity of flight movements should be limited wherever possible and should be temporary. If it appears that noise targets can be achieved once again via ongoing efforts, such as further fleet renewal or other measures, the capacity reduction (and other Category D operational restrictions) should be reconsidered. This means the aviation sector will be able to do more for surrounding residents in the short term and, in the long term, will be able to effectively maintain the global network at Schiphol, which is used by tens of millions of travellers each year and which makes a significant contribution to the Dutch economy. As mentioned above, it will also continue to be important to have sufficient ability to invest in additional fleet renewal in order to further reduce the impact on the living environment in the future.

(130) Compliance with measures is, of course, essential if the alternative is to be successful. KLM Group sees the usefulness of ILT more closely monitoring the finally agreed measures and noise targets. This can play a role in regulatory compliance and thus help to reduce the actual hindrance and the perceived hindrance. If the measures prove insufficient in the long term, KLM Group understands that additional measures should be considered and taken (jointly with the aviation sector).

(131) KLM Group calls on the Ministry to diligently examine these alternative measures as part of the Balanced Approach procedure. If necessary, we can further explain the suggestions put forward in this consultation responsduring conversations with the Ministry in the near future.

Appendix 1A

Detailed considerations regarding the approach and process in the Balanced Approach procedure

1.1 Start-up and implementation of the current Balanced Approach procedure

(1) The Balanced Approach procedure should involve going through the four categories of potential measures as described in paragraph **Error! Reference source not found.** of the main document. The Minister is now implementing the Balanced Approach, but is not doing so using the procedure prescribed by the Union legislator. For instance, in the "Hoofdlijnenbrief Schiphol", the Ministry already made a decision about the capacity reduction, namely an operating restriction. The Schiphol 2018-2023 Action Plan did not identify a noise problem that needed to be resolved. However, the Action Plan already stated in 2008 that a 5% reduction must be realised in the number of seriously hindered people in the outer area by 2020 (48 dB(A) L_{den}).[18] The Schiphol 2018-2023 Action Plan already noted that, based on the hindrance reduction achieved in 2012, a reduction of 10 to 12% could be expected in 2020 for a volume of 510,000 flight movements due to the implemented restrictive measures.[19]

> *"By 2020, the package of restrictive measures should have resulted in 5% fewer people who suffer serious hindrance in the 48 dB(A) Lden contour compared to 2008. Based on the achieved hindrance reduction, it was determined during the 2013 review of the Hindrance reduction Agreement that, for a volume of 510,000 flight movements, a hindrance reduction of 10-12% can be expected in 2020 if these measures are implemented. Evaluations on the annual use forecasts for runways and routes, which Schiphol had compiled in recent years, show that the reduction of hindrance could be even higher in 2020."*[20]

(2) A report from 3 May 2023, which was compiled by To70 upon instruction from the Ministry, stated that the total amount of noise in 2019 was more than 16% lower than the implemented limit scenario, despite an increase in the number of flight movements.[21] This has been attributed to fleet renewal.

(3) Determining an outcome in advance, namely a significant reduction in flight movements, without having initiating and completing a Balanced Approach, completely deviates from the prescribed procedure and guidelines.

(4) There is a clearly a goal reasoning, whereby the reduction played a decisive role when summarising the noise problem, the noise target, the time allowed to achieve this and the usefulness of the envisaged measures.

1.2 Balanced Approach at other European airports

(5) The Balanced Approach is not being implemented for the first time. In recent years, this procedure has already been followed at several European airports such as Heathrow (in London, United Kingdom), Charles-de-Gaulle (Paris, France) and Dublin (Ireland).

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18 Schiphol Action Plan 2018-2023, p. 40.

19 Schiphol Action Plan 2018-2023, p. 6 and 24.

20 Schiphol Action Plan 2018-2023, p. 6. A similar quote can be found in the nuisance reduction agreement (Parliamentary papers II 2013-2014, 29 665, no. 190 (p.255053)); an agreement that was also signed by, among others, the Minister as part of the 2008 Alderman Agreement (*Parliamentary papers II* 2008-2009, 29 665, no. 115b-1): *"Reducing the number of severely hindered people by 5% in 2020. In 2020, the package of restrictive arrangements (including the effects of the new system) should have resulted in 5% fewer severely hindered people in the 48 dB(A) Lden contour compared to 2008. Based on the nuisance reduction achieved in 2012, it was determined that, for a volume of 510,000 aircraft movements, a nuisance reduction of 10-12% can be expected if these measures are implemented."*.

21 Note To70, 3 May 2023 with reference 22.171.05, p. 3.

(6) The procedures in the Balanced Approach, as implemented at these airports, differ substantially from the Balanced Approach procedure that the Ministry is now implementing for Schiphol.

(7) Firstly, the other airports mainly focused on reducing night-time hindrance, while specific – percentage-based – the 24-hour period reduction targets have been set for Schiphol. In addition, the other airports actually had a specific reason, namely (major) expansion projects.[22] Such projects certainly do not apply to Schiphol, and there have been no other major changes in the noise situation. Whereas other countries used the Balanced Approach to take noise-related actions in relation to expansion plans at the airport, the Ministry intends to realise such a reduction at Schiphol without any such reason.

(8) Another essential difference between the procedure for Schiphol and the procedures for other airports concerns the time limit by which the noise target must be achieved:

Table I – Comparison with deadlines for achieving the noise target at other airports

	Schiphol	London	Paris	Dublin
Consultation	2023	2018	2020	2020
Reference year	2024	2018	2019	2019
Target deadline	2024	2023[23]	2027	2030[24]
Realization period	< 1.5 years	> 5 years	7 years	> 10 years

(9) It is striking that Schiphol is the only airport where the reference year is in the future. For the other airports, the reference years are in the past or in the same year as the consultation. All reference years are also prior to the COVID-19 pandemic, except for Schiphol. Secondly, it should be noted that five, seven and ten years respectively starting from the consultation have been allowed to achieve the targets set in London, Paris and Dublin. This is even five, eight and eleven years from the reference year. This is a substantial difference in approach and has an inherent impact on the chosen measure(s). The table below offers a general summary of these measures.

Table II – Comparison with other airport measures

	Schiphol	Other airports
Measures	The Minister seems to be pushing for a combination which, in any case, includes a reduction in capacity from 500,000 to 440,000 flight movements.	London: Ban on night flights, new take-off and landing procedures, offering incentives to airlines by using discount and compensation programs so that quieter aircraft are used, investment in insulation and relocation projects, and setting up a noise forum for the environment as well as a trust fund.
		Paris: Fleet renewal, differentiation of airport fares, CDA's, no test procedures for engines

22 Appendix 2, p. 9.
23 This is the deadline for the first objective.
24 This is the deadline for the first objective.

		between 22:00 and 06:00 o'clock, night flight quotas, residential façade insulation and a land purchasing program. Measures that were considered but not taken include a ban on night flights and a ceiling on the number of flight movements, due to the low cost-effectiveness and the large impact on home carriers.
		Dublin: Fleet renewal, noise quotas, preferential runway use, take-off and gliding rules, noise zones, façade insulation program (with subsidy) and monitoring by an environmental working group.

(10) The course and outcome for Schiphol is therefore significantly different from the other airports. This is mainly due to the following three factors:

(i) Firstly, the above-mentioned deadline for achieving the noise target. Whereas the (far-reaching) reduction at Schiphol must be achieved within a period of less than one and a half years, the deadline at the other airports is five to ten years. The more time that is available to achieve an objective, more measures can be considered and the effects of autonomous developments become clearer. The (unreasonably) short lead time envisaged by the Ministry for Schiphol has the inherent effect that measures like fleet renewal are not enough to achieve the (ambitious) reduction target on time. Table 5.1 of the Consultation Document also shows that many of the measures considered score poorly when it comes to feasibility for implementation as of November 2024. With these turnaround times, it is inevitable that capacity needs to be reduced.

(ii) Secondly, the inclusion of autonomous developments when achieving the noise target. Now that both the reference year and the deadline for achieving the noise target have been set to November 2024, all autonomous developments up to that date are not recognized as developments that can already contribute to a future objective. On the contrary, the situation with autonomous developments is being regarded as the starting point for the planned percentage reductions.

(iii) Finally, the involvement of the sector. In the Balanced Approach procedures for London, Paris and Dublin, the airport, the main home carriers and other major airlines are actively involved and have worked together to find solutions, as KLM Group has always advocated. When doing so, the interests of all stakeholders are taken into account in a transparent and appropriate manner.[25] Paris is a beacon when it comes to the involvement of the sector and proper consideration of stakeholder interests, where a ceiling on the number of air movements (among other things) has been waived because this would hit airlines too hard. In this case, and also in London and Dublin, the goal is being reached by gradually working towards a proportionate solution, as was the case with the Alders advice in the Netherlands. For Schiphol, consultation only takes place at a very late

25 The noise target was also consulted in other Balanced Approach procedures. See, for example https://consult.fingal.ie/en/consultation/aircraft-noise-consultation/chapter/noise-abatement-objective-nao-dublin-airport . In the case of Schiphol, the noise target (linked to the reduction target) is presented as a fait accompli, about which no stakeholder can offer any input.

stage, at a moment when a reduction target has already been decided along with a related noise target, which in fact makes it impossible to have a constructive dialogue about broadly supported solutions.

(11) The above shows that the Balanced Approach procedure for Schiphol differs significantly from the previous Balanced Approach procedures at London, Paris and Dublin airports when it comes to the used approach and assumptions.

1.3 Sound situation and identification of the noise problem

(12) The noise assessment is a fundamental part of the Balanced Approach procedure. If a noise problem is identified, the Balanced Approach procedure should be initiated to identify the most cost-effective measures that restrict the mobility of Member State residents as little as possible. Operational restrictions are very last solution that can be used in the Balanced Approach procedure.

(13) The noise problem and the noise target are determined in the Balanced Approach procedure using Directive 2002/49/EC,[26] taking into account the action plans of the Member States.[27] The most recent action plan for Schiphol is the action plan for Schiphol 2018-2023. The noise problem identified by the Ministry, and which is central to this Balanced Approach procedure, has not been included. To this end, the Ministry is preparing to adapt the Schiphol Action Plan 2018-2023.[28]

(14) The Regulation states that the noise situation should be assessed using a standard method, which can be found in the European Civil Aviation Conference Report Doc 29 entitled "Standard Method of Computing Noise Contours around Civil Airports", 3rd edition (**Doc 29**).[29] The Dutch formula for determining noise hindrance differs from more current international formulas and studies. This was identified by the MER commission in 2016 when an Environmental Impact Report (EIA) was drawn up. The MER commission then strongly insisted on the application of Doc 29. At the time, the State Secretary for Infrastructure and the Environment also requested the use of Doc 29 for the EIA 2016. In addition, use forecasts for Schiphol are also established based on Doc 29.

(15) The noise problem identified by the Ministry has not been determined using Doc 29. If the noise situation was assessed on the basis of Doc 29, a downward trend would have been identified when it comes people who are severely hindered and people who encounter sleep disturbances.[30] An operating restriction is therefore not justified.

(16) This trend decreases faster than the decrease in the number of flight movements. Flights are thus quieter. For example, based on Doc 29, there was a 38% hindrance reduction compared to 2019, while the number of flight movements decreased by 20%.[31]

(17) Instead of using the standard measurement method Doc 29, the Ministry announced during the consultation that its final decision will be based on the non-current NRM calculation model (this model has not been actualised). The reasoning behind this decision is that this would be prescribed by the Airport Traffic Act Schiphol (**LVB**). The LVB only prescribes this for the question of whether limits from the LVB have been exceeded, and not when assessing the noise situation and policy.

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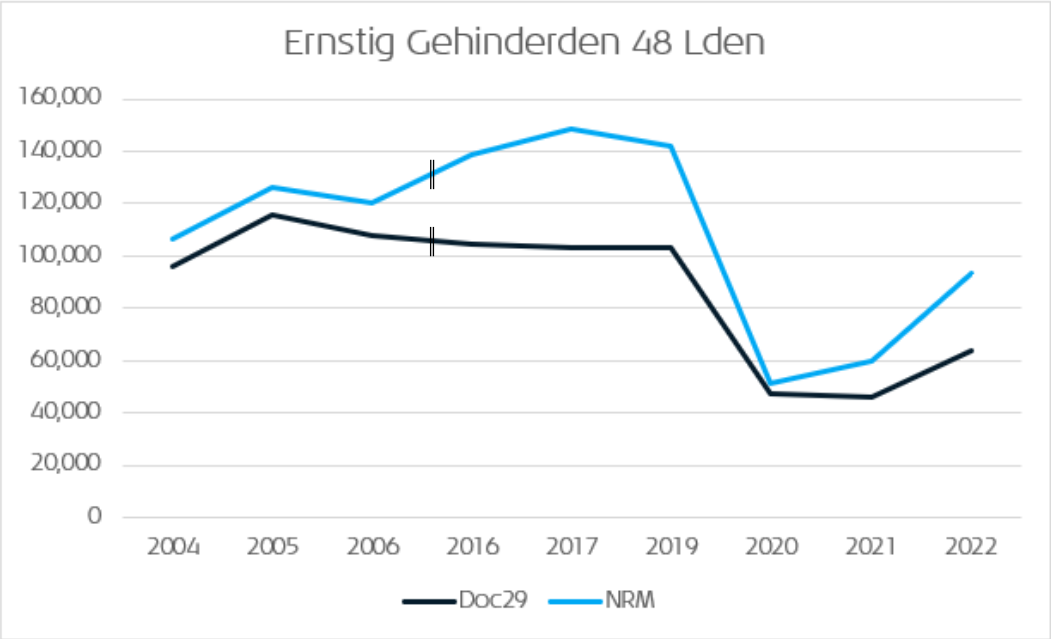
26 Article 5, first paragraph, Regulation.
27 Article 5(2) Regulation (EEC) jo. article 8 and Appendix V of Directive 2002/49/EC.
28 See https://www.luchtvaartindetoekomst.nl/onderwerpen/besluit-minder-vluchten-schiphol/aanvulling-actieplan-geluid-schiphol-2018---2023.
29 Article 6 jo. Appendix I Regulation.
30 Appendix 3.
31 Appendix 3.

(18) According to KLM Group, the calculation method used as the basis of the Balanced Approach procedure for Schiphol is therefore not intended for this purpose and is less accurate than the internationally accepted Doc 29 method.. In our view, the starting point of the procedure is not correct. KLM Group has explained this in more detail below.

Historical trends

(19) Permissible noise levels around Schiphol are determined based on the equivalence criteria. The Aviation Act states that the noise reduction targets in each new LVB must be more ambitious than its predecessor. The equivalence criteria consist of a number of objective parameters with associated limits. If the number of dwellings, people with severe disturbances and people with disturbed sleep in the corresponding noise contours remain below the relevant limits, the equivalence criteria have been met. The Ministry has also used the equivalence criteria, but determines the noise problem relating to these criteria based on data derived from the NRM calculation model and not Doc 29. The NRM data is less accurate, and show a different trend, as illustrated in the graph below.[32]



(20) When correctly measured in accordance with the Doc 29, as required by the Noise Regulation, trends in equivalence criteria and the extent to which they are met, do not show that the reduction targets of the Ministry are based on a non-existent increase in the noise problem

(21) Due to the COVID-19 pandemic, noise levels decreased significantly in 2020 and 2021. The entire aviation industry temporarily collapsed due to entry restrictions and a decrease in demand for air travel. The recovery of the aviation sector started in early 2022. The number of flights is currently around 90% of what KLM Group flew in 2019. Noise has increased, but remains well within the values in the equivalence criteria. Based on Doc 29, noise levels are lower than prior to the COVID-19 pandemic.

[32] Appendix 3.

Approach in the Balanced Approach for Schiphol

(22) A noise problem must be identified based on a noise assessment at the concerned airport, using objective and measurable criteria. This should at least have been done in accordance with Doc 29. The graphs in the Consultation Document, on the other hand, are based on the NRM calculation model and NRM data, which are also not useful because they have not been updated since 2014 and therefore do not reflect the realised fleet renewal.

(23) In addition, the current Balanced Approach for Schiphol places great emphasis on perceived hindrance. 'Perception', however, is not objectively measurable and cannot serve as a measure, especially now that comparison is being made with relatively quiet years during the COVID-19 pandemic.

(24) In particular, the Minister based himself on a GGD study into perceived hindrance. This study is only of limited use. The research tools include a questionnaire that is filled in every four years by municipalities in order to comply with their obligation under the Public Health Act. Therefore, no objective data is collected in this investigation. Moreover, this research is carried out from a different perspective, namely that of the Public Health Act, and is not focused on aircraft noise as such. This perspective is decisive for the methodology. The implemented questionnaires were completed on a random basis. In addition, 2016 and 2020 are the only measurement years, which means any decrease before 2020 may not have been taken into account.

(25) Based on this single study, it is not possible to formulate a far-reaching noise target. Besides being subjective, this research is characterised by a number of important factors that make the results paint a distorted picture. These can be summarized by the following passage from the study itself:

> *"The report states that, despite a decrease in the number of flights, more hindrance due to air traffic was experienced in 2020 than in 2016. One possible explanation is that, when asked about the hindrance experienced at home, more people were actually at home during the COVID-19 pandemic. [...] It may also be that, after months of relative silence, they perceived additional burden due to the re-emergence of air traffic. In addition, it is known that perceived noise and sleep disturbance depend not only on actual exposure, but also on non-acoustic factors, such as sensitivity to sound and satisfaction with the living environment."*[33]

(26) In other words, the hindrance perceived in this situation is tainted by the COVID-19 pandemic and, in general, by several other factors. People were more at home during that period and, after years of relative silence, may have perceived additional hindrance after the re-start of air traffic. The report shows that, besides the COVID-19 pandemic, there are cofactors that influence the level of noise and sleep disturbance caused by air traffic:

> *"The level of noise and sleep disturbance caused by air traffic is not only affected by actual noise exposure, but is also determined by other factors. These factors, or so-called non-acoustic factors, generally include socio-demographic factors (such as age, education and income), personal factors (sensitivity to sound, anxiety reactions, economic connection), social factors (expectation pattern, confidence, communication and controllability of sound) and situational factors (satisfaction with the home and residential environment) (Dusseldorp, 2011; Van Kempen, E.E.M.M. and Simon, S.N., 2019). The impact of socio-demographic factors has also been discussed in this report."*[34]

33 GGD GHOR Nederland, Belevingsonderzoek geluidhinder en slaapverstoring luchtvaart 2020, page 4-5.
34 GGD GHOR Nederland, Belevingsonderzoek geluidhinder en slaapverstoring luchtvaart 2020, page 45.

(27) In other words, factors that have nothing to do with airplane noise can affect the hindrance perceived by people living near Schiphol Airport. The Minister has nevertheless set a far-reaching noise target, partly based on perceived noise established in the GGD study. This is an unreliable measure and cannot justify taking decisive measures in such as short space of time.

(28) Th fact that the COVID-19 pandemic has had an effect should at least call into question the reliability of the results for perceived hindrance. This has also been demonstrated by the fact that the percentage of respondents who indicated that they are experiencing significant noise, in many municipalities around Schiphol, increased in 2020 compared to 2016, 35 while the number of flight movements in 2020 was obviously greatly reduced by the COVID-19 pandemic. The effect of COVID-19 pandemic is also supported in the report:

> *"The COVID-19 pandemic had a huge impact on the number of flight movements in 2020. Despite the decrease in flight movements, the severe noise hindrance that has been experienced has increased significantly compared to the previous measurement in 2016. Local residents were asked about their experience over the past 12 months. As there have been major changes in the number of flight movements between autumn 2019 and autumn 2020, one has to question which period was considered by respondents. It may well be that, when offering a score for the severity of noise-related hindrance and sleep disturbance, respondents took into account that they experienced more noise in 2019 and early 2020 than in the rest of 2020. They may have based their judgement on that first period or, after months of relative silence, may have been particularly affected by the re-emergence of air traffic. In this context, the (un)predictability of air traffic noise also plays a role. Irregular flying, when it comes to frequency and runway use around civil airports, plays a role in the perceived hindrance (Breugelmans, O. Et al., 2004; Houthuijs, D.. et al., 2006).*
>
> *In addition, being more at home or tele-working due to COVID-19, and therefore staying in a different environment than usual, may have influenced the perceived hindrance. This is indicated by the fact that neighbours also experienced more hindrance in 2020 than they did in 2016. The questions about perceived noise and sleep disturbance explicitly refer to the situation at home."*[36]

(29) In addition, the study shows that most sleep disturbances occur between 06:00 and 07:00 and between 22:00 and 23:00, that sleep disturbance also occurs around airports with total or partial night closure, and that the extent to which noise disturbance is perceived is also influenced by age and income:

> *"In the Netherlands, an average of 1.6% of 18-64 year olds said their sleep was severely disturbed by air travel. If people experience sleep disturbances, this is mainly between 22.00h and 07.00h. A lot of sleep disturbance is particularly experienced at the start and end of the night (between 22.00-23.00h and 06.00-07.00h). Sleep disturbance also occurs around airports that have total or partial night closures and also in areas that are far from an airport.*
>
> *As with noise, age and income have an impact on the amount of sleep disturbance that is experienced. In addition, there is also a correlation with education and urbanity. 18-64 year olds with a lower education or living in a highly urbanised area experience more sleep disruption due to air traffic."*[37]

35 GGD GHOR Nederland, Belevingsonderzoek geluidhinder en slaapverstoring luchtvaart 2020, page 17.
36 GGD GHOR Nederland, Belevingsonderzoek geluidhinder en slaapverstoring luchtvaart 2020, page 45.
37 GGD GHOR Nederland, Belevingsonderzoek geluidhinder en slaapverstoring luchtvaart 2020, page 44.

(30) KLM Group is also surprised for other reasons that urgent action is said to be needed *'to bend the curve'*. The Minister has used the Infographic to immediately show that intervention is needed:

Figure 6 – Infographic of the Ministry

(31) This image seems to indicate that the noise level has risen dramatically in recent years and will rise significantly above the 'noise ceiling' in 2024 if action is not taken. This is unrealistic, as the number of flight movements will not exceed 500,000 in 2024, while there will also be fleet renewal (as the Ministry has also acknowledged when describing the autonomous developments). In addition, the Ministry has included graphs in the Consultation Paper about the actual trends in noise, which show that a downward trend had already started prior to the COVID-19 pandemic.[38] More important than this inconsistency in the Consultation documentation is that the downward trend can also be witnessed when the prescribed Doc 29 is used.[39]

(32) This decrease in noise can be attributed to the efforts of the aviation sector which, thanks to billions of euros of investment, has renewed the fleet in order to be able to fly quietly. This has been done, on the one hand, because of the ambition to maintain the network quality of Schiphol and KLM Group and to continue to make flying possible for millions of people, and, on the other hand, because of a commitment to improve the quality of the living environment. Many operational measures have also been taken to bring air traffic in line with the NNHS and to reduce hindrance.[40] Furthermore, according to Schiphol's use forecast for 2023, the equivalence criteria have again been met effectively with a traffic volume of 487,000 movements, 31,300 of which are carried out overnight:[41]

(33) Finally, it is important to note that the noise problem identified by the Ministry is based on investigations by, among others, RIVM and GGD, which show that the increase in the perceived hindrance does not rhyme with the evolution in the number of flight movements.

(34) Although the studies are not necessarily useless, it underlines that studies aimed at perceived hindrance are subjective and cannot be used objectively and measurably to identify a noise problem. The perceived noise-related hindrance is not linked to the actual noise level and the

38 Consultation document, Figures 3.1 to 3.3.
39 Appendix 3.
40 Schiphol Action Plan 2018-2023, p. 21 – 24; *Parliamentary papers II* 2013-2014, 29 665, no. 190 (p.-255053).
41 Use forecast 2023, 20 October 2022, https://open.overheid.nl/documenten/ronl-ede7418996e363d16ca60af6020c79dd5e4063d6/pdf.

number of flight movements. If the Ministry already wants to use these studies, it must accompany them with objective and measurable data and it is up to the Ministry to investigate how it is possible for the number of reports to increase while the number of flight movements does not increase and the absolute amount of noise decreases. Without further investigation and without further explanation, an investigation based on the number of reports gives, in this context, a distorted view of the noise problem.

(35) In light of above, there is no reason, let alone urgency, to intervene now with far-reaching objectives that must be met within a period of less than one and a half years. The noise problem identified by the Ministry is not supported by available information about noise levels around Schiphol. The mere fact that a GGD study shows a – somewhat tainted – increase in perceived hindrance, does not offer a sufficient basis, particularly as objective figures about noise levels paint a different picture.

Tabel 3.3: Toetsing aan criteria gelijkwaardige bescherming geluidbelasting Doc.29 o.b.v. hoog scenario exclusief onderhoud

Aspect	Criterium[78]	Prognose 2023
Geluidseffecten	Het gebruik van Schiphol dient te voldoen aan de criteria voor een gelijkwaardige bescherming van de omgeving	Het maximale verwachte gebruik van Schiphol voldoet aan de eisen van gelijkwaardigheid
Woningen met een geluidsbelasting van 58 dB(A) Lden of meer	13.600	9.300
Ernstig gehinderden met een geluidsbelasting van 48 dB(A) Lden of meer	166.500	94.900
Woningen met een geluidsbelasting van 48 dB(A) Lnight of meer	14.600	8.000
Ernstig slaapverstoorden met een geluidsbelasting van 40 dB(A) Lnight of meer	45.000	20.700

Conclusion

(36) Absolute noise levels are lower than was previously the case. The noise levels have decreased due to measures including fleet renewal and the adaptation of operational procedures. The 'bending the curve' advocated by the Ministry has in fact already taken place. The actual noise development does not therefore justify the assertion that there is an urgent need for a radical change of course in the short term.

(37) For the sake of completion, KLM Group notes the following. In the "Hoofdlijnenbrief Schiphol", the Ministry cites a supposed need to stop precautionary enforcement for the sake of effective legal protection as justification for its new course. As far as KLM Group is concerned, an alleged legal protection problem is no reason to reduce the number of air movements at an airport. It is clear that the latter is the central objective of the Ministry, towards which all the intermediate steps of the Ministry, such as the ending of precautionary enforcement, are geared. Insofar as the Ministry nevertheless insists on the point that there is indeed a need to cease the precautionary enforcement immediately, KLM Group notes that on 5 April 2023 the court ruled that this should be continued and did not consider that there would be a need to desist for the sake of legal

protection.[42] In addition, Prof. Schueler already established in 2013 that the NNHS, as it would later be enshrined in the Aviation and LVB laws, offers equal or more legal protection to residents than the old system.[43]

6.4 Noise target

Setting the noise target

(38) The noise target must be set clearly and quantitatively. The noise target must allow an economic analysis of the noise problem and potential measures. The identification of a noise target is the first step to be taken in the noise assessment of an airport. Therefore, the noise target should be identified before an economic assessment is made and a sound justification should be available. This is clearly not what happened at Schiphol, as explained below.

(39) During the ICAO General Meetings, it has always been emphasised that noise is a common problem and that solutions must be long-term.[44] Baseline analysis should consider improvements over a period of five to ten years.[45] In any case, the period should be such as to take account of changes in the fleet mix, the longer duration of land-use planning around airports and other factors.[46] Logically, there should also be five to ten years between the reference year and the deadline for achieving the noise target, to allow autonomous developments to be adequately taken into account.

The noise target as set by the Ministry

(40) The noise target that is key to the Consultation Documentation is as follows:

(i) Number of homes with a noise hindrance of 58dB(A) L_{den} or higher: minus 20%

(ii) Number of persons severely hindered by noise hindrance of 48dB(A) L_{den} or higher: minus 20%

(iii) Number of homes with a noise hindrance of 48dB(A) L_{night} or higher: minus 15%

(iv) Number of persons severely hindered by noise hindrance of 40dB(A) L_{night} or higher: minus 15%

(41) In the November 2024 baseline set by the Ministry, the total number of homes experiencing noise hindrance in a 24-hour period would be 5,665 and the number of severely hindered persons 91,090. The night figures would be 4,832 homes and 20,710 severely hindered.

(42) As indicated above, this noise target is to be achieved by November 2024 and noise reduction measured by November 2024. This goes a long way and is not justified by developments in the noise situation. Moreover, it is very different from targets adopted abroad as well as from those set for Schiphol in the past. For example, at the time of the advice from the Alders Table in 2008 and 2013, the target was set at a 5% noise hindrance reduction by 2020 compared to the standard for those severely hindered in the outer area (48 dB(A) L den). In addition, on 26 June 2020, the Ministry continued to work towards an annual 2% reduction in the number of severely hindered persons around Schiphol,[47] which would amount to a reduction of about 8% by November 2024.

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42 Noord-Holland Court, 5 April 2023, ECLI:NL:RBNHO:2023:3010.
43 *Parliamentary papers II* 2013-2014, 29 665, no. 190, p. 4.
44 33rd ICAO General Assembly.
45 ICAO Guidance, paragraph 3.4.
46 ICAO Guidance, paragraph 3.4.
47 *Parliamentary papers II* 2019-2020, 29 323, no. C, p. 5.

Nevertheless, the Ministry is now proposing (additional) reductions from 15% to 20% as a noise target for November 2024. The new target is in no way proportional to the annual 2% target that the Ministry apparently set in 2020. Moreover, there is no substantiation whatsoever, let alone a clear and quantitative justification, for a noise target that will now, within two years, encompass a reduction three to four times higher and will also entail other noise contours. During the technical session held on 20 April 2023, the Ministry recognised that there was" no rocket science" behind the 20% reduction targets and that 'a firm step' would need to be taken. The Consultation Paper refers to a 'significant improvement' of the situation for residents, without any further justification.[48]

(43) The lack of substantiation of the selected noise target gives the impression that the desired measure, which marks the implementation of the policy decision already made to reduce to 440,000 flight movements, has been the decisive factor in terms of achieving the noise target. Despite the fact that it ought to be the other way round, i.e. the measure should serve the noise target.

(44) KLM Group does not dispute that the Ministry sets the noise target and, taking into account the Balanced Approach, how this objective should be achieved. However, in the present case for Schiphol, the Ministry is not using this scope in accordance with the intention of the Union legislator by setting the noise target in such a way that only an operating restriction can lead to the desired result. The Balanced Approach procedure cannot be used in this way. After all, it is becoming meaningful and a combination of measures absent operating restrictions seems impossible because the Ministry wants the far-reaching target to be achieved in the short term.[49]

(45) Not only will a huge reduction be required, but it must also be achieved within two years. Effectively, only a year and a half remains in the meantime while the Balanced Approach procedure is still in full swing, the outcome of the consultation and the final combination of measures have yet to be reported to the European Commission, and so everyone in the sector is still unaware of the final measures to be taken. The bottom line is that when the Balanced Approach reaches completion, the goal must be achieved almost immediately. No time is being devoted to achieving this through a gradual path. Here, too, it seems that the Ministry has used the lead time to eliminate alternative measures, which would realistically leave no other remedy than to reduce to 440,000 flight movements, i.e. to implement its policy objective.[50]

(46) The Minister is ignoring the fact that both the ICAO Guidelines and the Balanced Approach procedures in other countries suggest that this is a long-term process, in which investments in fleet renewal should play a real role and stable and predictable aviation policy requires a medium-term noise target. See the ICAO Guidelines on this subject:

> *'"The length of time over which the noise situation is projected should be sufficiently long to take into account changes in the fleet mix, the longer-term nature of airport planning and other factors. It should be the usual to establish a baseline noise assessment that examines noise in the present and into the future at a period of time established by the authority (e.g. five-year and ten-year intervals). To get a sense of the noise situation as it has evolved, the authority might also want to assess the noise situation at intervals in the recent past as well."*[51]

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48 Consultation document, p. 23.
See table 5.1 of the Consultation Document, where many of the measures have been poorly rated for the feasibility of deployment as of 2024.

50 Although a combination has been presented that allows 500,000 aircraft movements, it is not realistic that this will be the final combination now that it is expected to face resistance from LVNL because the Buitenveldertbaan should be used less intensively, which is not operationally feasible.

51 ICAO Guidance, paragraph 3.4.3. See also paragraph 5.4.3.

(47) During the technical session on 24 January 2023, the Ministry recognised that the current noise target is short-term. This is also reflected in the Consultation document.[52]

(48) KLM Group also regrets that the Ministry did not involve stakeholders in setting the noise target, as is customary within the compass of the procedures in other countries.[53] In the view of KLM Group, such consultation would have improved the quality of the noise target.

Conclusion

(49) The Ministry's noise target does not meet the requirements of the Balanced Approach. There is no thorough research to define a noise problem and target, which are essential steps. Nor is the current noise target in any way proportional to the Ministry's previous 2020 target of reducing the number of severely hindered persons by 2% per year. Nevertheless, the Ministry envisages a significant reduction in the very short term, despite the assumption of ICAO Guidelines and the established practice with regard to Balanced Approach procedures. It seems that the noise target serves no other purpose than to implement the Ministry's reduction policy. This means that the Ministry's Balanced Approach procedure has not been fully implemented in the right way.

6.5 Reference year and baseline

Establish the reference year and baseline

(50) The reference year is the starting point. A change in the noise situation is measured against the reference year. This can only be done if all relevant data are available for the reference year on the noise situation in that year, based on a comprehensive assessment. This situation can subsequently be used as a benchmark for the noise target to be set. For example, in the case of a Balanced Approach carried out in 2023, the noise situation in 2022 can be taken as the starting point and it will be possible to calculate that a hindrance reduction of a certain percentage will have been achieved by 2030 compared to 2022. However, the impact of Covid-19 should also be taken into account when selecting a specific reference year. From this perspective, the 2018 operating year strikes KLM Group as the most representative reference year to take as a starting point.

(51) The baseline noise situation is the difference between the current situation and the expected situation at a certain time in the future if all planned and autonomous mitigating measures are taken into account, without further action being taken. Therefore, no additional measures are taken at the baseline situation. The baseline period should be sufficiently long to adequately take into account changes in the fleet mix and the longer duration of land-use planning at and around an airport and other factors. For example, in the example of a Balanced Approach in 2023, with 2022 as the reference year and a noise target for 2030, the autonomous developments up to 2030 would already be taken into account in order to assess the extent to which the noise target is being met. In turn, this can be taken into account when determining the necessary measures.

(52) The method of using the reference year and baseline described above is in line with the Balanced Approach procedures that have been completed for London, Paris and Dublin (see Table I above).

The reference year and baseline in the Consultation documentation

(53) In the light of the above, it is very strange and inaccurate that the Ministry should set the reference year in the future. No data are available for November 2024 and no assessment of the noise situation at that time can have been carried out. In addition, the noise target is also to be achieved by November 2024, which means that the period from the baseline actually runs to the

[52] Consultation document, p. 23.
[53] See Appendix 2, page 8.

reference year and autonomous developments will not contribute to the outcome in November 2024. Instead, the noise target will continue to shift.

(54) Furthermore, a number of autonomous developments by November 2024 cannot be considered fully implemented. As a minimum this pertains to the use of gliding flights (continuous descent approach, or **CDA**). This depends on airspace review and the development of a new LVNL air traffic management system called iTEC (interoperability Through European Collaboration) Central Automation System (**ICAS**). iCAS is expected to be implemented in 2024, but the airspace review will not be implemented until 2026. As a result, the beneficial effect of this autonomous development cannot be taken into account before 2024.

Conclusion

(55) The reference year and baseline have been incorrectly applied. The reference year has been incorrectly set in the future, precluding the possibility that autonomous developments will contribute to the achievement of the noise target due to the way in which the Ministry has realised the Balanced Approach.

6.6 Measures

Types of measures when applying the Balanced Approach

(56) The Balanced Approach consists of four categories of measures that can be used to remedy an identified noise problem.

(57) Firstly, the reduction of aircraft noise at source. This refers to a revision of aircraft noise standards to ensure that they reflect the current state of aircraft technology. Thus noise reduction is achieved by establishing and implementing noise certification standards as referred to in Annex 16, Part 1, Chicago Convention. When assessing this potential measure, consideration should be given to: (a) integration into fleets, over time, of technological improvements complying with the latest standards; (b) specific modernisation plans for fleet renewal of the air carriers operating at airports; (c) national plans to establish the latest noise standards; and (d) adoption by parties to the Chicago Convention of the latest ICAO recommendations on noise.

(58) Secondly, land-use planning and management. This pertains to diverting unsuitable land use away from the vicinity of airports and providing sites around airports for appropriate use. These measures have a strong preventive approach. Unsurprisingly, this is already playing a role in the passive phase of the Balanced Approach. There are roughly three different measures: firstly, regulation measures; secondly, mitigating measures; and thirdly, financial measures.

(59) Thirdly, noise reduction procedures. These measures may only be taken if it has been demonstrated that there is a noise problem and that all safety standards are met. Examples include the use of strictly preferential runway use, the use of noise-preferred routes and the use of noise-limiting departure and arrival procedures.

(60) Fourthly and finally, there are operating restrictions, such as capacity reduction. This includes any noise-related action that restricts or reduces access to an airport.

(61) Operating restrictions should only be used as a last resort. It is explicitly stated in the Noise Regulation that operating restrictions should only be considered as a last resort[54] and that the measures chosen should not be more restrictive than necessary.[55]

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54 Article 5, paragraph 3, Noise Regulation.
55 Article 5, part 6, Noise Regulation.

The measures consulted

(62) Under the Balanced Approach as required by the Noise Regulation, the Ministry should have scoured the first three categories to find the measure(s) offering the greatest cost-effectiveness. Only if these fail to provide a solution should an operating restriction, the fourth category, be considered.

(63) Although the four categories all form part of the consultation, it is clear that the noise target, which is to be achieved by as early as 2024, is formulated in such a way that it can only be achieved by means of operating restrictions. KLM Group has already responded above to the way in which the noise target has been formulated. The proposed measures are inextricably linked to this.

(64) The Consultation Document ultimately presents three combinations of measures:

Combinatie B	Combinatie C	Combinatie D
• M10 – Vermindering van het gebruik van de secundaire banen • M7b – Verlenging van het nachtregime (avond + ochtend) • M8 – Vermindering van het gebruik van Buitenveldertbaan • M1 – Stimuleer luchtvaart-maatschappijen om stillere vliegtuigen te gebruiken door differentiatie van luchthavengelden • M14 – Reductie van de capaciteit tot 440.000 vluchten in totaal / 29.000 nachtvluchten	• M10 – Vermindering van het gebruik van de secundaire banen • M7b – Verlenging van het nachtregime (avond + ochtend) • M8 – Vermindering van het gebruik van Buitenveldertbaan • M1 – Stimuleer luchtvaartmaatschap-pijen om stillere vliegtuigen te gebruiken door differentiatie van luchthavengelden • M15c – Capaciteit van nachtvluchten verminderen tot 25.000 (500.000 totaal)	• M7b – Verlenging van het nachtregime (avond + ochtend) • M1 – Stimuleer luchtvaart-maatschappijen om stillere vliegtuigen te gebruiken door differentiatie van luchthavengelden • M14 – Reductie van de capaciteit tot 440.000 vluchten in totaal / 29.000 nachtvluchten

(65) These measures are not cost-effective (less costly for society), not feasible, entail many adverse secondary effects and, with the exception of combination D, have a significant overshoot.

Disadvantages of the measures consulted

(66) In combination B, measures M10, M7b and M8 do not appear to be implementable in a straightforward wa. These will lead to very adverse secondary effects. Excluding the expected non-performance costs, this combination will have a significant impact on KLM Group's earning capacity. Consequently, it will not be possible to renew around 5 narrow-body and 5 wide-body planes up to and including 2030. This will result in approximately 5% less noise reduction.

(67) As with combination package B, measures M10, M7b and M8 do not appear to be applicable in combination C. A reduction to 25,000 flight movements cannot be implemented without additional measures. Based on the impact of the reduction in the night, this combination will have an impact on KLM Group's earning capacity and thus on the reduction of the hindrance to be achieved.

(68) Finally, the significant impact of measure M7b also renders combination D not feasible. As mentioned above, this measure will lead to high non-performance costs, which are very difficult to quantify due to the impact of the measure. Apart from that, the reader is referred to the comments on combination B.

(69) The combinations are therefore not cost-effective (less costly for society) and consequently are not compliant with the principles of the Noise Regulation. In addition, the Ministry's proposals involve an overshoot; they go beyond what is necessary to achieve the consulted noise targets. Intrinsic to this is the fact that they are more restrictive than necessary. The noise targets can also be achieved by 'non-overshoot' measures, which will have a less far-reaching impact on the

aviation sector and KLM Group in particular. The combination of measures proposed by the Ministry in the Consultation Paper is therefore in conflict with Article 5(6) of the Noise Regulation.

(70) All combination packages include a significant capacity reduction from Schiphol. Such abrupt capacity reduction also entails a number of other (difficult to quantify) disadvantages:

i. Other countries will be burdened by an increase in negative external effects such as noise and environmental impact;

ii. The Dutch economy can be harmed by the need to discontinue destinations, which makes the Netherlands less connected to the world as a trade country. There will be a further deterioration in the business climate. In its study on the employment effects of fewer flights at Schiphol, SEO Economic Research estimated that a reduction to a maximum of 440,000 annual flight movements will result in a reduction in the working population of more than 13,000 people.

iii. The Dutch aviation sector (and first and foremost KLM Group) will be disproportionately affected by a reduction in capacity in line with foreign airlines;

iv. Dutch public interests will not be served, because limiting flight movements can have adverse effects on the travel behaviour of low-income citizens (for example, it can become more difficult and/or expensive to go on holiday); and

v. A significant reduction in capacity in an already limited and highly internationally oriented market entails many risks without precedent in the modern history of transport infrastructure.[56]

(71) Appendix 1b contains technical comments on the three combinations.

(72) Finally, KLM Group points out that there are proportionate and cost-effective alternatives. These alternatives are discussed in Sections 3 and 4. In that regard, KLM Group will, where useful, draw a comparison with the measures envisaged by the Ministry, including their feasibility.

Conclusion

(73) KLM Group considers that the three proposed combinations of measures contained in the Consultation Document do not concern the most proportionate and cost-effective measures capable of achieving the objectives set. There are less far-reaching measures available, which will be more effective in the longer term than the Ministry's proposals.

[56] Other comments on the negative effects of a capacity reduction can be found in chapters 3 and 4.

Appendix 1B

Technical considerations regarding the consultation documents

1.1 Consultation document Balanced Approach Schiphol[57]

(1) This appendix provides additional detailed comments for each page to the comments in the previous appendix 1a.

(2) General: It is striking that nowhere in the consultation document is any indication given in relation to the noise target that new-build construction has increased the number of severely hindered people and instances of severe sleep disturbance by as much as 15% from 2005 onwards. The biggest increase is in Amsterdam, Haarlemmermeer, Zaandam, Aalsmeer and Amstelveen. (comparison of property files 2021 to 2005).

(3) P. 7: Indicates a need to act in the short term. Following the court ruling in the interim proceedings for Track 1, this need is no longer present.

(4) P. 20: The reduction from 32K in the night to 29K in the night has been temporary as an alternative during the introduction of CDAs. Later, reduction to 29k was agreed but explicitly linked to 500k: The 2008 Alders Agreement includes agreements on the introduction of CDAs (continuous descent approach) in the late evening from 20.30-23.00, starting with an experiment in the 22.00- 23.00 period. The aim was to reduce the noise hindrance in the area further away from the airport. During the experiment with the new system, it became clear that the introduction of CDAs could not be carried out in a way that was shared by all parties. An alternative package of measures was then agreed, consisting of seven elements. The first three ensure an equal amount of barrier reduction (estimated at 5,500 severely hindered people) as with the introduction of night CAs. The remaining elements have been added to the process to arrive at an alternative package: '"*1. CDAs from 22.30h unless the operation opposes it; 2. Development of CADs at the edges (beginning and end) of the the 24-hour period landing peaks on the Aalsmeerbaan (36r) as a secondary runway; 3. A reduction of 3,000 night movements compared to the previously agreed ceiling limit of 32,000 night movements; 4. An expedited implementation of selectivity; 5. A second instalment of the "Leefbaarheidsfonds"; 6. Research, on the basis of existing material, into increasing the interception level of the 'Instrument Landing System' at Schiphol from 2,000 feet to 3,000 feet or higher; 7. Should the experience with CDAs lead to a substantially higher volume, or an extension of the times of flight of CDA, than in the time slot agreed under the first point, the associated reduction in noise hindrance will then be deducted from the extent of the compensatory measures agreed above under points 1, 2 and 3, after discussion at the table.*" This package was in force as long as the conditions for releasing the alternative package were not met and included a reduction in the maximum number of aircraft movements during the night to 29K. The aviation industry has conducted research and demonstrated that CDAs have been complied with in accordance with the Alders Agreements. The ceiling limit was subsequently adjusted to 32K. Hence 29K was a temporary appointment.

(5) P. 21: Figure 3.1 with noise hindrance index: Choosing 2004 as the starting year gives a misleading perspective, as this was the starting year for De Polderbaan. 2005 would be a more representative starting year, as safety has been subject to many changes during the first year. The actual concept came into being in 2005.

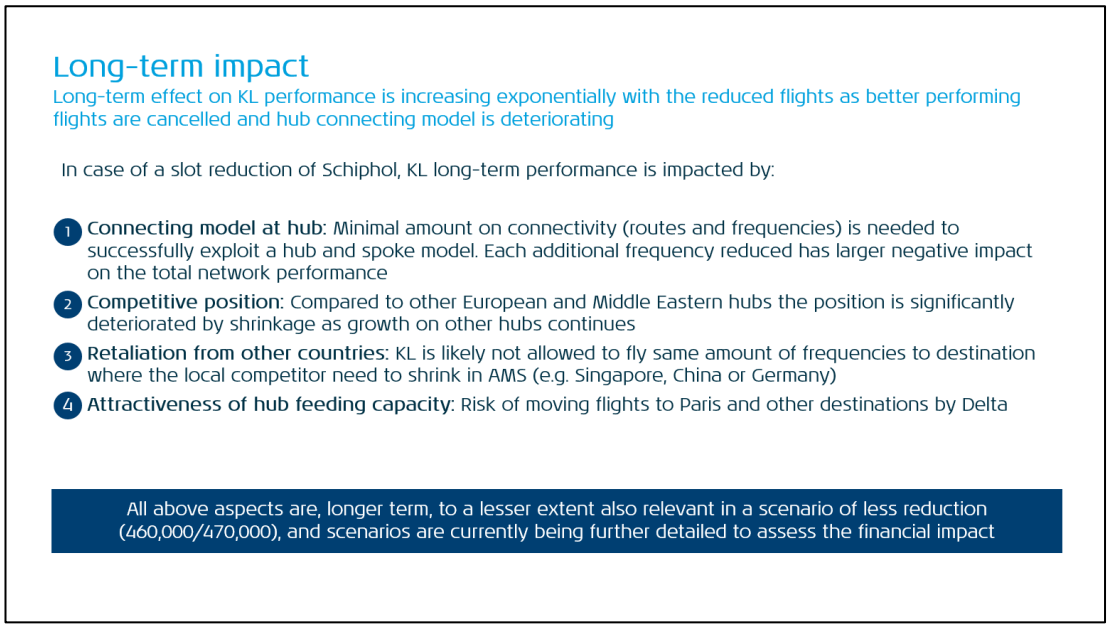
(6) P. 24: Re statement: "*For arrivals on runway 18C and 06 during 2+1 runway use (period 'L') the default CDA procedure was selected, where flight profile data was available to simulate this effect*". For runway 18C, the radar data has been investigated by NLR to establish the extent to which CDAs are currently being flown. The last period during which the landings were made systematically at 18C (with the "Polderbaan" also in use, so that 18C was the secondary runway) is the end of last

57 internetconsultatie.nl/balanced_approach_schiphol/b1

year (and 1 January this year). During this period there is no 100% CDA use. It occurs in a significant proportion of traffic, but certainly not all traffic. In 2.7.1.2 and 2.7.1.3 et seq., the AIP talks about night approaches and approaches during the day. For the night it is indicated that night routes and CDAs have to be flown; for the day it is only stated here that ATC has the option of following a RNAV route for approaches on 36R. Hence there is nothing here about approaches 18C and 06 and there is no talk of CDAs being required to fly. Similar information can also be found in Section 2.2. In the AIP there is nothing concrete for runways 06 and 18C. What is also striking is that the CDAs are also selected for runway 06. This is a primary runway (both in the GP2023 runway preference table and in the QRC25), which means that flying CDA during the day is certainly not a logical choice here. The above means that it is not realistic at the moment that 100% CDAs are flown on runways 18C and 06. In addition, the Ministry itself confirmed in the Airspace Review Stakeholder Presentation of March/April 2023 that CRAs are dependent on airspace review and ICAS, which will not be in place until after 2025.

(7) P. 24: Re statement "*For arrivals, reduced flaps arrival procedures were selected for all arrivals, where flight profile data was available to simulate this effect*". In the AIP, the following can be found in Section 3.1: "*For noise abatement using a reduced flaps landing procedure is recommended. However, use of this procedure is subject to captain's decision and safety prevails at all times.*" Overall, it is advisory rather than mandatory. Reduced flaps is an option that companies quite logically prefer because it leads to lower fuel costs. There is an overview at Schiphol of aircraft with which RF can be flown; a device not on that list may not be assumed to fly RF. However, To70 has assumed that all aircraft will fly RF if there is data for the Doc29 calculation. This raises the question of the extent to which the list of aircraft with Doc29 RF profiles is the same as Schiphol's list. It is quite conceivable that the lists do not match, so the implementation in the To70 calculations may not be realistic. In addition, it is not realistic in practice that RF is always flown, for example because it is not desirable from the point of view of track capacity. Thus a 100% RF implementation would be contrary to the desire to make more use of the primary runways.

(8) P. 27 and p. 28: With regard to Table 5.1 (shortlist of measures to be considered), measures (i) which cannot be modelled, or (ii) 'which could seriously harm the hub function' (e.g. limiting the opening of the airport at night) are not included in the BA. It is unclear whether these measures will no longer be considered at all and how it has been considered that the measures in the latter category are indeed more harmful to the director's function than the proposed cap on VTAs. Such a cap will have a significant impact on Schiphol and KLM Group.



Repercussions and eventually hub erosion may augment the direct effects of prolonged flight capacity constraints

NOT EXHAUSTIVE

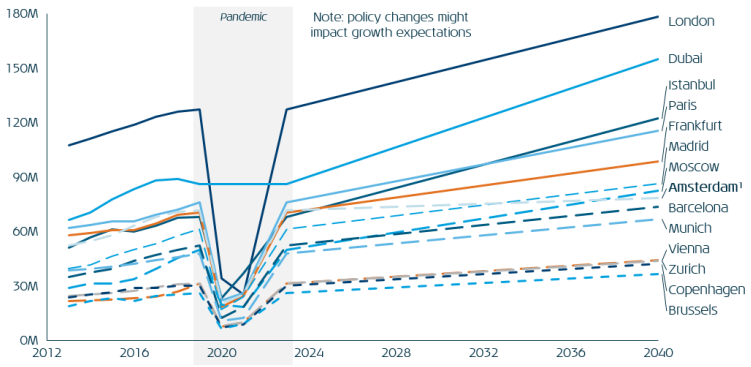
Details follow

Immediate, direct effects	Potential repercussions	Potential hub erosion
Other carriers e.g., Turkish, Finnair likely deploy larger, noisier aircraft to maintain seat capacity [see Dusseldorf example]	**Potential repercussions from other countries affecting home carrier** • E.g., Chinese Civil Aviation could force KLM to reduce frequencies equally, when China Southern Airlines needs to reduce at Schiphol • Same for e.g., Japan, Korea, Singapore – and some routes have taken 25 years to create • Could also be indirect e.g., a Qatar gas tanker might not head to Rotterdam but to Hamburg	**Schiphol might de-hub**, number of destinations is diminished
Ticket prices go up, as a consequence of reduced capacity and fixed cost (charges, ticket taxes)	**Delta as a crucial AFKL partner might reallocate flights** to CDG (20 daily AMS arrivals, 2019) – if KLM mitigates by allocating slots to Delta, its competitors might object the decision	**Attractiveness to do business in the Netherlands** further drops
Boost of competing carriers (e.g., LH, BA), also outside EU (e.g., TK), as travelers find other means	**Potential EU-level objection** from airlines with e.g., 7x weekly Schiphol schedule currently, perceive creation of "unfair playing field"	**Likely lower AFKL Group investment allocation** to KLM / Schiphol hub
KLM's ability to invest in fleet renewal reduces, delaying transition to cleaner engines and less noise		**Low-cost carriers likely step in**, focusing on European point-to-point traffic
Schiphol-based cargo forwarders may choose to truck freight (e.g., to Luik, as in pandemic)		**Economic activity at Schiphol-Rijk decays** as cargo is gradually consolidated elsewhere
Ground Services and Engineering & Maintenance lose third party business		**Schiphol's size will be more in line with home market size**, in contrast to government's ambition to sustain a hub function (as per coalition agreement)

Schiphol would evolve into a secondary (P2P) airport, losing ground to the leading hubs

Hub size projections, annual passengers

PRELIMINARY



Methodology notes: AMS: 2019-levels reached in 2023, followed by 0,6% CAGR up to 2040 (effect of larger aircraft neutralizing decrease in movements). Other airports: 2% CAGR starting 2023 up to 3,5% for airports with major capacity growth plans, in particular IST, DXB (as ref: Boeing Commercial Market Outlook 2022-2041 for European aviation = +3,0% PAX). Also FF55-plans will benefit airports just outside EU.

1. Amsterdam's position in 2040E is inflated, as passenger volumes are less impacted than flight movements because airlines will use larger aircraft to compensate for capacity restrictions

With other hubs still growing, Schiphol might evolve from Europe's #4 hub to a non-hub airport #8; equivalent to Munich or Barcelona today

Connectivity offered, and thus competitive positioning, will spiral downward, e.g.,

- 10-15% fewer destinations
- Less year-round destinations
- No longer longhaul focused

Lost KLM traffic partially backfilled by other airlines; but rest will connect over other hubs, which will get bigger (zero-sum from a CO_2 standpoint)

(9) P. 28: Several groups of measures on the long-list have lost weight without negative scores (e.g. optimising [operational] procedures). Here, for example, you would expect this to be looked at by procedure.

(10) P. 29/30: Here, it seems that the extension of the night regime and reduction of secondary runway usage have not made any adjustments to the flight schedules and that costs have been calculated in terms of delay damage. However, in this form, these measures do not appear to be implementable. There is also a great deal of uncertainty about the "Buitenveldertbaan" measure. LVNL, for example, is also very critical of this.

(11) P. 31: On measure N/1 – Enforcing fleet renewal: It is claimed that no policy measures are available to reduce fleet renewal, but this is unsubstantiated.

(12) P. 32: It is not correct that 29K night flights have been fine-tuned to the ORS. At the time, the parties agreed to a temporary reduction from 32K to 29K, until the effect of adjustments to continuous descent approaches had been made (after which they could return to 32K). In meetings held with KLM Group, 29K has been discussed in relation to 500K. See also the comment in this chapter at marginal Error! Reference source not found..

(13) P. 32: The methodology used for the night-specific cost-effectiveness analysis (Annex D) is different from that used in the cost-effectiveness analysis for measures that achieve the noise target on all 4 indicators. For the specific analysis for the night, only direct and operational costs have been calculated.

(14) P. 35: The methodology applied does not seem correct.

(15) P. 35: The BA targets will not be met with the proposed capacity reduction to 440. Apparently, the (subsequently conceived) noise target and the initially conceived noise target do not match. It is also noticeable that reduction is a very expensive option.

(16) P. 36: There appears to be a discrepancy in the cost-effectiveness shown in Tables 6.2 and 6.3 for the reduction of severe sleep disturbances in the case of 29k night flight movements (EUR 8,000 and EUR 2,500-3,100 respectively).

(17) P. 38: Combination A is written off but only the 2nd target is just about not being met. Given the low cost, this seems to be a combination with some potential. Combination C (without reduction) is determined to be the most cost-effective. Also in combination with, for example, a cap on 485k movements, this would probably meet the targets. Also missing is To70's comment that combinations B and C conflict with Article 5(6) of EU Regulation No 598/2014, which leads to the conclusion that these combinations cannot be proposed either.

(18) P. 43: There is no point in notifying other EU countries, or in proceeding with procedures based on international conventions (e.g. EU – US Open Skies Agreement)

(19) P. 44: There is nothing relevant about any information measurement at the start of the procedure.

(20) P. 44/45: There is no mention of the approval of the House of Representatives and Senate regarding the measures that will result from the BA procedure.

1.2 Annex A: To70[58]

(21) P. 5: Re statement '*To introduce this capacity restriction, 440an EU member state needs to follow rules and procedures as prescribed in EU regulation No 598/20142, commonly known as the Balanced Approach procedure*'. This statement seems to confirm the Ministry's purpose reasoning, the aim should be to reduce noise. The fact that there is a reduction in flight movements could only be a consequence. Let alone be called a capacity reduction to 440k movements before starting the BA procedure. The 440k comes from a slightly older proposal, which is based on the old HHP system and which is set at 440k not to cross any HHP without operational measures.

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(22) P. 5 & p. 6: '*This research has been conducted without the direct involvement of the stakeholders affected by the (combination of) measures that are part of this research*'. Unfortunately, the aviation sector has not been consulted in this 'study', which undermines the value of the report.

(23) P. 7: It is reported that between 2009 and 2019 Schiphol has grown steadily from 400k to 500k flights. This is incorrect and it has been accompanied with many peaks and troughs.

(24) P. 8: Re Figure 2: This seems to be a suggestive graph, since the number of movements in 2007 was already 430k, only the bars stand out much more than the line.

(25) P. 12: Re Figure 5: It is not clear how the '*number of severely hindered people within 48 dB(A)*' can increase by 2005 build environment whilst TVG is decreasing.

(26) P.13: Re statement '*The TVG considering all movements has roughly been the same from 2009 till 2019*': This is not correct when you look at the chart, TVG is definitely decreasing.

(27) P. 17: Re statement '*This forecast contains 500,000 movements (including 32.000-night flights) and includes the autonomous developments that are expected to take place until 2024, as described in paragraph 3.2*'. The baseline scenario is considered too optimistic.

(28) P. 19: Re statement "*in order to provide a full overview of baseline and impacts, this study also provides, for information purposes, the impact expressed in the criteria as included in the European Noise Directive (END). Table 3 shows the noise impact of the baseline scenario for the END criteria*". Here it can be seen that the Dutch standards are much stricter than the European standards.

(29) P. 21: Re statement: 'Increase the number of continuous decent approaches (on top of autonomous development)' and statement 'Increase runway capacity'. There is no autonomous development of CDAs.

(30) P. 22: The selection criteria have been drawn up in such a way that certain measures will be excluded more swiftly: (i) feasibility: The short-term objective (November 2024) will exclude more effective long-term measures. (ii) Displacement of noise hindrance: By specifying that a measure is only excluded if it leads primarily to the shifting of noise to other places people around Schiphol, rather than in general, a capacity reduction will not be excluded (although it may involve a shift of the problem to other airports).

(31) P. 23: It is unclear why 65% was chosen as the maximum percentage of aircraft types in the S1 category (most noise-friendly types), rather than another percentage. Percentage justification is missing to determine effectiveness.

(32) P. 26: With regard to measure M10 (minimisation of secondary runways during peak hours), it is not correct that the study carried out concludes that there is room to reduce secondary runway use between peak hours. This study focused on the Aalsmeerbaan spectrum and also does not conclude that there is a capacity to implement such a measure. It does not seem mathematically feasible to eliminate all flights during the short time frames of 07:00-08:00 and 13:00-15:00, which will also affect other parts of the day due to delays that will be caused.

(33) P. 27: Re statement '*It is assumed that the reduction will take place on a pro rata basis*'. *The exact interpretation of this is still open, so the actual effect may differ.*

(34) P. 29: Re results of noise simulations: To be sure, Doc29 uses 'ANP' profiles, but it is unclear which ones are used, or how they have been modelled. (For example, when flaps, when landing gear, etc.)

(35) P. 35: The statement that combination D achieves all targets is incorrect (this is not the case for reducing the number of severely sleep disturbed people (14.9% vs 15% respectively).

(36) P. 37: Re '*This is however in conflict of the way the Balanced Approach methodology works, since that would require member states to first consider all available measures from the first 3 pillars before considering a capacity restriction*'. This statement conflicts with the introductory part of the consultation document (p. 14), in which there is already a rationale for noise reduction in the latter category (capacity limitation).

(37) P. 38: It is unclear why 2027 has been chosen as a perspective, rather than a longer-term perspective (for example, a measure such as fleet renewal might have more impact).

(38) P. 41: The starting point of 495,485 flights as a forecast for 2023 seems to be inaccurate only in the "gebruiksprognose" (usage forecast) file. Schiphol's usage forecast includes the number of 487,000 flights.

(39) P. 53: If the END criteria are applied (EU legislation), the desired noise targets will be achieved through all combinations.

(40) P. 55: The overall approach to the different calculated combinations is incorrect, as the measures have not been supplemented to the desired noise targets of 20% Lden and 15% Lnight reduction.

1.3 Annex B: Decisio/Beeling[59]

(41) P. 9: Regulation 598/2014 (EU Balanced Approach) does not define cost-effectiveness and does not specify the costs to be considered.

(42) P.10: Unclear which BA procedure was followed in France - there have also been several other recent BA procedures (e.g. at Charles-de-Gaulle, London Heathrow and Dublin Airports).

(43) P.14: Unclear how the manual overview relates to the method of calculating impact measures on noise (in Annex B: not monopolised and included as cost savings)

(44) Other: no costs are included due to delay time for the "Buitenveldertbaan".

M1:

(45) P. 17: The effect of shifts from aircraft types S2-5 to S6-7 has not been included in the calculations. Decisio indicates that calculated effects are therefore an underestimate. Further increasing the charges for S1 is a dial that can be turned even further to further increase the impact of this measure.

(46) P.17: Cargo requires a 48% discount.

(47) P. 18: Boeing 737-800 should be included in noise category S2.

(48) P. 20: The assumption that 100% of S1 cargo flights can be moved to other airports is too high, not every carrier will succeed. There is also no mention of discount schemes for airport taxes.

(49) P. 23: '*Measure has a relatively larger impact and is more cost-effective within the Lden contours than in the Lnight contours*' - unclear whether this comment / calculation is correct.

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(50) P. 26: Unclear whether the number of 18,692 and 28,123 is correct.

(51) P. 27: Possible delay costs (EU Regulation) have not been taken into account.

(52) P. 27: The increase in fuel consumption is not taken into account for so-*called 'block hours'*.

M7:

(53) P. 25: Unclear which morning extension was adopted (06:00-07:00).

(54) P. 31: With regard to relocation flights to "Polderbaan" and "Buitenveldertbaan": 'track miles' have not been included.

(55) P. 32/37: CO2 and other climate effects are not taken into account, although it is assumed that additional flying and taxiing will be done through the partial runway closure.

(56) P. 33/38: Net external costs have not been specified.

(57) P. 40 et seq.: The analysis did not include the fact that carriers are likely to have to deploy larger aircraft to optimise their flights. This can lead to higher CO2 emissions (and more noise).

(58) P. 41: Hub carrier comments: The sequences and assumptions are incorrect. A stakeholder assessment is missing in order to do this.

(59) P. 41: Other network carriers comments: It has not been taken into account that e is unlikely to be cut equally, for example at DL and AF, where KL's network is likely to be cut rather than the partners. A stakeholder assessment is missing.

(60) P.48: It has not been (again) taken into account that carriers are likely to have to deploy larger aircraft to optimise their flights. This can lead to higher CO2 emissions (and more noise).

(61) Adecs 2019 p. 22: Factor also not included in analysis regarding reduction of night flights at Schiphol - link

(62) Adecs / CE Delft 2023 p. ii "'*Noise gain resulting from fleet renewal can also be used to deploy larger aircraft, with the possible consequence that the number of sleep disturbances remains at the baseline. Fleet renewal can only continue to benefit from sleep disturbances if a (hard) limit value is legally set. Schiphol is slot-regulated and airlines have the choice of aircraft type to use. A legal guarantee for the type of aircraft to be deployed is therefore not possible. Direct control (by the Ministry, for example) on fleet renewal may not be possible, but the (im)possibilities surrounding indirect control could be further explored.*" - link

(63) P. 61: Unclear what the 485k/29k and 500k/27k scenarios had done in the analysis.

(64) P. 71: Unclear whether the assumptions are sufficiently correct.

(65) P. 75: The cargo discount item of 48% has not been factored in.

(66) Other: It seems that due consideration has not been given to the fact that there are (almost) no slots available at the other hours: If 32K night slots need to be moved to the margins between 21h00 and 22h40 or 06h40 and 08h00 then it is very likely not to fit. Therefore, more capacity will be lost than is taken into account. With regard to extending the night regime (and reducing secondary runway usage), it seems that the offer of flights has not been postponed in this study.

(67) **Other**: The operational costs seem to be estimated on the low side (no justification currently available)

M14:

(68) **P.43**: There is not enough evidence to justify why the ticket premium effect (grey font under 'Airlines') is a redistribution effect. It can be argued that if ticket prices increase, profits will mainly go to foreign shareholders, which could be described as a detrimental effect. The number for the impact on p. 44 (EURm 620), however, seems to take account of this scarcity of effect (otherwise the amount would be on the high side).

(69) **Other**: There are doubts in this regard about how the number of flights has been scaled (e.g. ICA < 4 freqs per week). It can also be expected that the peaks will be reduced by KLM & partners. The question is what impact this will have on the calculated effects.

M15:

(70) Big question here is (certainly in combination with other measures M7 & M10) whether there is enough space just outside the night available in the various scenarios.

1.4 Annex C: Adecs/CE Delft: Measures for night movements Schiphol[60]

(71) In general, this annex is a quite theoretical piece, where there is not much transparency vis-à-vis how some calculations are constructed. In addition, the consultation document states (p. 32) that only a reduction in the number of night flights can be achieved from all the detailed measures in this document. The rest is eliminated, including the wider application of CDAs. Although the impact of CDAs is relatively small (4 to 5%), it would be best to look at what is possible, as each percent might make the difference in whether or not to meet the (night) targets. See (for example) scores for combination A..

(72) It is noteworthy that the measures passed on also lack some measures, such as the introduction of a financial incentive for fleet renewal: (i) enable accelerated depreciation on aircraft; and (ii) issue bank guarantees for financing new aircraft. This is a big bottleneck in terms of fleet renewal.

(73) **P. i**: In addition to the baseline situation, the reduction of night flights was discussed, for which cost calculations were previously made in 2020 (Table 1). However, this reduction will not be developed as a measure. The costs seem to be mainly related to a shift from transfer to lower yield OD. However, the analysis does not seem to take scarce profits into account either. The cost for this 29k variant (€6.8-8.3 million) is also much lower than the Decisio/Beeline (€21.6 million) calculation. The deltas of homes (-14%) and sleep disturbances (-11%) are in line with the TO70 calculations (-13% and -11% respectively).

(74) **P. 3, Table 1**: It is noteworthy that the results in the update - e.g. an updated flight schedule and housing file - are (much) better than in the initial analysis (except for the cost of insulation; there was a mistake in the 1st analysis). For example, fleet renewal was already achieving the same result in 2027 as with a night reduction to 29k (the same assumptions vis-à-vis fleet renewal within the BA are then made 'ordinary' part of the autonomous developments).

(75) **P. 4/42**: Measure 2 - Disallow most noisy aircraft: This analysis does not seem to be entirely correct:

60 internetconsultatie.nl/balanced_approach_schiphol/b1

(76) P. 7/42: Measure 4 – Remediation: This option would probably prove unworkable/unnecessary in practice. It would seem more logical to include a measure that includes a compensation scheme (e.g. EUR 10k/20k per year) for noise.

(77) P. 8/42: Measure 5 – Insulation: This measure states that this calculation is indicative because the degree of insulation is not taken into account in the maintenance because the noise value on the exterior façade of a house counts. This means that current BA objectives do not allow measures for within the framework of land-use planning and management.

(78) P. 25: Another interesting thing is that a further reduction in the number of movements related to cost-effectiveness is not the most advantageous. This should mean that a further night reduction should be abandoned.

(79) Other: The total replacement costs (for comprehensive replacement of fleet) are allocated to this measure either as asset value (new aircraft cost -/value current aircraft) or as an increase in annual financing and depreciation costs. But it is not the case that the planes have to be replaced simply because of noise. For example, most aircraft in Table 10 (10k flights) are scheduled to be replaced in any case, such as the A330-200/300.

(80) Other: In addition, the cost benefits of the new aircraft (in particular fuel consumption) are not taken into account. The correct analysis is the increase in cost per ATK for the expected remaining life without measure. That would seem to come out much lower.

(81) Other: It also seems very high that 39 aircraft have to be replaced for 10k slots

1.5 Annex D: Update of Schiphol night flights

(82) P. 4: It is assumed by the Ministry that the use of aircraft types is only legally necessary. However, agreements can also be signed by airlines, for example.

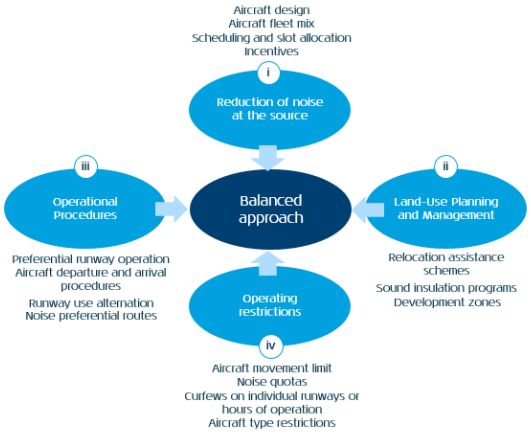
(83) NB In Annex D, this analysis has been updated to significantly reduce costs (and also reduce the number of flights to be replaced). What is not yet included are the operational benefits of more efficient aircraft (and potentially higher yields due to the fact that 'a better product' is being sold).

Appendix 2

Benchmark of Balanced Approach procedures

Various noise reduction measures should be weighed for cost-effectiveness in the BA

Four principal elements of the Balanced Approach



Source: ICAO

Highlights Balanced Approach (*BA*) procedure

Definition: The Balanced Approach (*BA*) is a procedure under which a range of available measures are considered in a consistent way with a view to addressing the noise problem in the most cost-effective way on an airport-by-airport basis

Regulatory framework: the BA has been made directly applicable to Dutch airports through Regulation (EU) No 598/2014

Schiphol

Scope: The rules apply only to larger airports with more than 50 000 civil aircraft movements per year (such a Schiphol).

Competent authority: In the Netherlands, the relevant authority is the The Human Environment and Transport Inspectorate (ILT) of the Ministry of Infrastructure and Water Management

Three recent BA procedures show differences compared to the procedure launched for AMS

Comparison of other recent BA procedure characteristics at CDG, LHR and DUB with AMS setting

	Characteristics at CDG, LHR, DUB with AMS setting	Characteristics at AMS
Definition baseline	1: Autonomous fleet development 2 of the 3 other procedures did not include autonomous fleet development as part of the baseline	Fleet renewal plans included in baseline, plus 0.2dB reduction (departure) and 0.1dB reduction (arrival) per year 2024-2027
Definition baseline	2: Baseline year All 3 procedures involved a historical pre-covid baseline (i.e., not a future) year for calculating effectiveness of noise reduction measures	2023 usage prognosis of Schiphol (487K/31K), adjusted (495K/31K) and extrapolated to 2024 (500K/32K) used as base
Measures taken	3: Fleet renewal 2 of the 3 other procedures included fleet renewal as a dedicated measure as part of the ultimate package to meet the goals	Target needs to be met by Nov 2024, effectively dismissing (accelerated) fleet renewal as a lever
Measures taken	4: Capacity reduction 0 of the 3 other procedures ended up (so far) with aircraft movement reduction	Target is so short-term that some (temporary) capacity reduction is likely inevitable
Measures taken	5: Insulation 3 of the 3 other procedures ended up with an insulation scheme in the final package of measures	Target is so short-term that insulation schemes are not deemed feasible and are therefore disregarded
Measures taken	6: Timelines 3 out of 3 other procedures took ~3-6 years total from initial noise abatement plans to targeted implementation of measures (and ~5-10 years from initial noise abatement plans to reaching noise targets)	Total timeframe looks to become <2 years (January 2023 until Nov 2024)
Approach	7: Sector engagement 3 out of 3 procedures are characterized by active sector collaboration (solutions primarily driven by carriers, with airport actively orchestrating the process), which is seen as key to success in delivering the proposal	No active airport orchestrating role
Approach	8: Rationale for BA 2 out of 3 other procedures BA procedures have been conducted because of airport expansions (additional runways being built), (3rd BA procedure followed voluntarily)	BA procedure unilaterally imposed by government in order to materialize noise targets through capacity reduction
Approach	9: Incomplete BA procedures 3 out of 3 procedures are still pending due to legal action undertaken by resident groups	Targets and process of BA procedure may be unlawful, currently being investigated by legal team

Source: ICAO, expert interviews, publicly available BA consultation documentation

1: 2 of the 3 other procedures did not include autonomous fleet development as part of the baseline

PARIS AÉROPORT

- Fleet renewal was not included in baseline. A historic baseline year (2019, pre-COVID-19) was applied
- Gained noise reduction due to autonomous development is purely left for the benefit of residents, and will not translate into additional flight movements due to operating restriction of 20k night flights
- Only existing plans to apply CDA's to all flights (coming from ~50% of flights) were included in the baseline

DublinAirport

- Fleet renewal was not included in baseline. A historic baseline year has been applied (2019) with a mid-term goal of a reduction of 30% sleep-disturbed people)
- Gained noise reduction due to autonomous development directly translates into additional flight movements, as there have been set noise quota instead of a caps on flight movements
- Only existing insulation schemes were included in the baseline

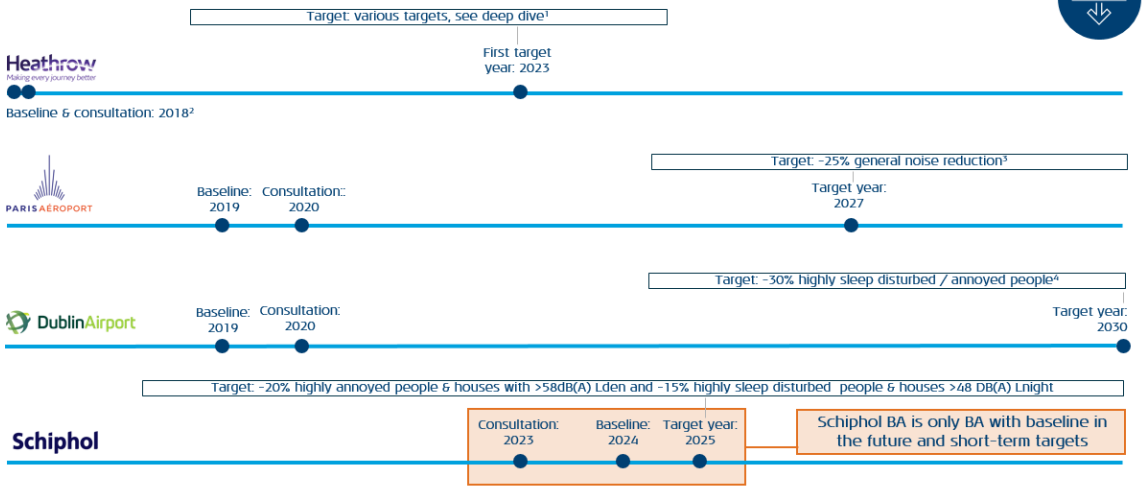
Heathrow

- Fleet renewal was very likely included as part of the baseline. Although airlines offered increased fleet renewal as part of the array of potential noise abatement measures it was in the end not included as a stand-alone measure for noise reduction
- Gained noise reduction due to autonomous development is purely left for the benefit of residents, and will not translate into additional flight movements

Schiphol Fleet renewal plans included in baseline, plus 0.2dB reduction (departure) and 0.1dB reduction (arrival) per year 2024-2027

Source: Expert interviews

2: All 3 procedures involved a historical pre-covid baseline year for calculating effectiveness of noise reduction measures



1. Noise Action plan 2019-2023 BA contains various specific targets and baselines, see deep dive
2. Airspace and future operations consultation contains qualitative NAO including statement to "not exceed 2013 noise levels"
3. Exact CDG noise targets unclear from publicly available information & expert interviews
4. NAO contains increased threshold targets after 2030, see deep dive. definition of highly sleep disturbed people may differ from SPL definition

Source: Expert interviews, publicly available BA consultation documentation

3-5: AMS measures package differs from measures taken at other airports

Other procedures included fleet renewal (2/3) and insulation schemes (3/3) and excluded a capacity reduction 0/3 as part of the final package of measures

PARIS AÉROPORT

- At Paris CDG Airport, various noise abatement measures have been implemented in accordance with the BA over the past few years. These include, but are not limited to:
  - Fleet renewal
  - Differentiated airport charges
  - Continuous descent approaches
  - No testing of engines between 22:00 to 06:00.
  - Night flight quota restrictions between ARR 00:30-05:29 & DEP 00:00-04:59
  - Home sound insulation
  - Land acquisition program
- Measures that have been considered as part of the BA, but have ultimately not been implemented relate to a night curfew and an increased flat cap on flight movements, due to low-cost effectiveness and major impact on home carriers

DublinAirport

At Dublin Airport, various noise abatement measures have been implemented in accordance with the BA over the past few years:

These include, but are not limited to:

- Fleet renewal (One of the measures that replaced a flat cap of 65 flights per night (23:00-06:59) for the North Runway)
- Noise quota (One of the measures that replaced the North Runway flat cap as described above)
- Preferential runways
- Rules on departure climbs, continuous descent approaches
- Inner and outer noise zones that prohibit development and fund insulation
- Noise insulation scheme (20k grant for isolation when living within 55Lden contour)
- Environmental Working Group with a flight track monitoring system

Heathrow

At London Heathrow, various noise abatement measures have been implemented in accordance with the BA over the course of the past few years. These measures include, but are not limited to:

- Night curfew
- Landing / take-off procedures (differentiating the angle of approach / take-off, preferential routes / runways and reduced reverse trust)
- Incentivization of carriers through a rebate / compensation program for carriers using low-noise planes (therefore indirectly incentivizing fleet renewal)
- Investing in noise reduction "domes" (e.g., isolation projects of schools or houses directly under flight-path) and relocation schemes
- Community Noise Forum and Trust Fund

Schiphol

- **Fleet renewal**: Target needs to be met by Nov 2024, effectively dismissing (accelerated) fleet renewal as a lever
- **Insulation**: Target is so short-term that insulation schemes are not deemed feasible and are therefore disregarded
- **Capacity reduction**: Target is so short-term that some (temporary) capacity reduction is likely inevitable

Source: Expert interviews

6: 3 out of 3 other procedures took several years, with ~1 year for the actual BA procedure and ~3-6 years total from initial noise abatement plans to implementation of measures

PARIS AÉROPORT

- The most recent procedure (still pending) will likely take approximately 3 years from initiation to implementation

DublinAirport

- 1.5 years for the most recent BA procedure (still pending)
- Consultation period of 5 weeks with consultation submission December 2020, notification March 2021, final permission June 2022) and ~6 years from initiation of the project until implementation.
- Target year: initial noise reduction results 2030, thereafter additional targets in 2040 and 2050.

Heathrow

- Recent procedures took approximately 3 years from initiation to implementation. Consultation period took 6 weeks.

Schiphol

Total timeframe looks to become <2 years (January 2023 until Nov 2024)

Source: Expert interviews

7: 3 out of 3 procedures are characterized by active sector collaboration which is seen as key to success in delivering the proposal

Various best practices can be identified from recent BA procedures

PARIS AÉROPORT

- **Jointly** have the airport, main home carrier and other major carriers **work together towards a final proposal** in the Balanced Approach
- **Deliver a plan with all stakeholders / the entire sector**. Get buy-in from the residents, home carrier and main cargo and low-cost carriers.
- Make sure new charges are **compatible with home carrier**: make charges evolve with same speed as a home air carrier develops its fleet. Consider to apply the charges also with regard to NOx and / or CO2

DublinAirport

- **Jointly** have the airport, main home carrier and other major carriers **work together towards a final proposal** in the Balanced Approach (in the Dublin Airport case, this was easy as aforementioned parties had an economic interest in getting rid of the flat cap for the North Runway
- **Home carriers should be actively involved**, bringing expertise and data (fleet renewal), but also clearly relaying implications that any measures (in the Dublin Airport case, noise quota) may have on operations
- In the Dublin Airport case, home carriers (Air Lingus and Ryanair) **never provided data on fleet modernization**, only confirmed Dublin Airport assumptions

Heathrow

- One of the specific **best practices for airlines** that made them successful in BA procedures was to **continuously keep all stakeholder engaged**, and communicate with **clear consistent messages**
- **Applying a combination of measures benefitted stakeholder satisfaction** regarding abatement measures applied, as these measures for example benefitted both airlines (through the incentivization program) and residents (through the isolation program)

Schiphol Target is so short-term that some (temporary) capacity reduction is likely inevitable

Source: Expert interviews

8: 2 out of 3 other procedures BA procedures have been conducted because of airport expansions

PARIS AÉROPORT

- The NAO was created for the BA procedure that was requested by **local residents** (neighborhood committee)
- NAO: **25% general noise reduction in 2027** for the whole year during the **night**

DublinAirport

- The NAO and BA procedure was pursued by the **government pursuant to Dublin Airports' proposed expansion**
- NAO: "Limit and reduce the **long-term adverse effects of aircraft noise** on health and quality of life, **particularly at night**, as part of the sustainable development of Dublin Airport". The NAO will be achieved as follows:
  - The number of people **highly sleep disturbed and highly annoyed** in 2030 shall reduce by **30% compared to 2019**
  - The number of people **highly sleep disturbed and highly annoyed** in 2035 shall reduce by **40% compared to 2019**
  - The number of people **highly sleep disturbed and highly annoyed** in 2040 shall reduce by **50% compared to 2019**
  - The number of people exposed to aircraft noise **above 55 dB Lnight and 65 dB Lden** shall be **reduced compared to 2019**

Heathrow

- The NAO and BA procedure was pursued by the **government pursuant to LHR's' proposed expansion with a third runway**
- NAO: "To **limit and, where possible, reduce the effects of noise** on health and quality of life and **deliver regular breaks from scheduled flights** for our communities during the **day and night**. We need to do this whilst making sure the measures we put in place are **proportionate and cost effective**"
- Various **qualitative and quantitative targets** have been determined to implement the NAO in the applicable noise action plan. Please refer to the following slide for further information

Schiphol BA procedure unilaterally imposed by government in order to materialize noise targets through capacity reduction

Source: Expert interviews

9: 3 out of 3 procedures are still pending due to legal action undertaken by resident groups

PARIS AÉROPORT

- **The BA procedure is still pending,** due to the fact that the airport set the NAO, which should actually be an appointed government authority as required by EU law

DublinAirport

- The BA procedure is **still pending**, as **local residents** have legally challenged the final package of measures

Heathrow

- The related airport expansion (third runway) is **still pending** due to legal action by residents

Schiphol Targets and process of BA procedure may be unlawful, currently being investigated by legal team

Source: Expert interviews

Appendix 3

NLR analyses

Dedicated to innovation in aerospace

Analyses ten behoeve van Balanced Approach

Uitgevoerd in opdracht van KLM

Managementsamenvatting

- Context: het ministerie van IenW heeft besloten tot een Balanced Approach procedure om de effecten van vliegtuiggeluid op de omgeving van Schiphol te reduceren. De balanced approach methodiek vereist dat gezocht wordt naar een maatregelenpakket dat zo kostenefficiënt mogelijk is. KLM heeft het NLR gevraagd om diverse analyses uit te voeren nav de Balanced Approach procedure.

- Aanpak: in dit kader zijn de volgende werkzaamheden uitgevoerd door het NLR:
  - Inzicht geven in de historische ontwikkeling van het aantal ernstig gehinderden
  - Berekening van de geluidreductie ten gevolge van diverse maatregelen en van de effecten van een combinatiepakket van maatregelen waarmee voldaan wordt aan de doelstellingen van de balanced approachprocedure
  - Beschouwing van enkele maatregelen zoals voorgesteld door IenW
  - Doorkijk naar toekomstige ontwikkeling van het aantal ernstig gehinderden

Managementsamenvatting

- Resultaten:
  - Doordat de invoergegevens voor Schipholberekeningen van het Nederlandse rekenmodel (NRM) sinds 2014 niet meer aangepast zijn, wordt de verstilling van nieuwe vliegtuigtypes niet volledig meegenomen, dit is een oorzaak waardoor het NRM een toename van de hinder laat zien over de periode van 2005 tot en met 2019 terwijl het Doc.29 geluidmodel (waar wel recentere gegevens gebruikt worden) een afname laat zien.
  - Met het voorgestelde pakket van maatregelen, waaronder het verstillen van de vloot op Schiphol, stillere startprocedures en lagere aantallen vliegtuigbewegingen, zowel in de nacht als in totaal, worden alle doelstellingen gehaald.
  - De berekeningen voor de diverse toekomstscenario's laten zien dat de ernstige hinder na 2025 voor alle scenario's afneemt, zodat in 2027 voor alle scenario's de reductiedoelstelling behaald wordt.

Dedicated to innovation in aerospace

OPDRACHTGEVER	**Koninklijke Luchtvaart Maatschappij N.V.**
EIGENAAR	**NLR**
NLR DIVISIE	**Aerospace Operations**
VERSPREIDING	**Beperkt**

Inhoud

- Context
- Aanpak
- Historische ontwikkeling
- Analyse van diverse geluidreducerende maatregelen
- Uiteindelijk maatregelenpakket
- Beschouwing van enkele maatregelen zoals voorgesteld door IenW
- Toekomstige ontwikkeling van het aantal ernstig gehinderden tot en met 2030

Context

- Het ministerie van IenW heeft besloten tot een Balanced Approach procedure om de effecten van vliegtuiggeluid op de omgeving van Schiphol te reduceren
- Hiervoor heeft IenW het rapport 'Balanced approach study Schiphol Airport' laten opstellen
- In dat rapport wordt een maatregelenpakket voorgesteld om de gewenste reductie te behalen
- De balanced approach methodiek vereist dat gezocht wordt naar een maatregelenpakket dat zo kostenefficiënt mogelijk is
- KLM heeft het NLR gevraagd om diverse analyses uit te voeren nav de Balanced Approach procedure
- Hierbij is gezocht naar een alternatief maatregelenpakket dat voldoet aan de doelstellingen voor de Balanced Approach
- Het effect van dit maatregelenpakket is getoetst met geluidberekeningen
- Geluidberekeningen zijn uitgevoerd met het Europese rekenmodel Doc.29
- Deels worden ook resultaten besproken die bepaald zijn met het Nederlands Rekenmodel (NRM)
- Streven is om te komen tot kostenefficiënter maatregelenpakket met haalbare maatregelen
- Tevens zijn enkele aanvullende ondersteunende analyses uitgevoerd

Aanpak (1)

Om te komen tot een alternatief maatregelenpakket zijn de volgende stappen doorlopen:

1. Opstellen van lijst met maatregelen
2. Vaststellen welke maatregelen binnen de door IenW gestelde termijn haalbaar zijn, rekening houdend met:
   - Veiligheid
   - Luchtverkeersleiding
   - Luchtvaartmaatschappijen
3. Doorrekening effect van haalbare maatregelen op effecten geluid
4. Op basis van effecten per maatregel zoeken naar maatregelenpakket dat:
   - Voldoet aan doelstellingen
   - Kostenefficiënt is
5. Doorrekening van definitief maatregelenpakket op effecten geluid

Aanpak (2)

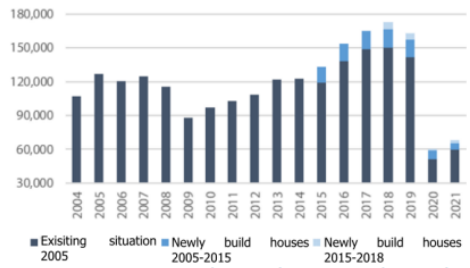
Aanvullend zijn de volgende zaken onderzocht

1. Inzicht in historische ontwikkeling van aantal ernstig gehinderden
2. Beschouwing van enkele maatregelen zoals voorgesteld door IenW
3. Doorkijk naar toekomstige ontwikkeling van het aantal ernstig gehinderden

Historische ontwikkeling (1)

- Rapport 'Balanced approach study Schiphol Airport' geeft inzicht in verloop hinder door de jaren
- Rapport laat toename hinder zien tov 2004
- Informatie obv Nederlands rekenmodel (NRM)
- Effect van vlootverstilling zit niet volledig in NRM berekeningen na 2014 omdat sindsdien geen nieuwe invoergegevens zijn toegevoegd voor Schipholberekeningen
- Duidelijke toename ernstige hinder in 2005 tov 2004, dit hangt oa samen met problematiek met parallel starten vanaf Polderbaan en Zwanenburgbaan (zie bijvoorbeeld handhavingsrapportage Schiphol 2005)
- Daardoor is de situatie in 2004 minder representatief omdat na dat jaar een operationele wijziging is doorgevoerd ivm de vliegveiligheid

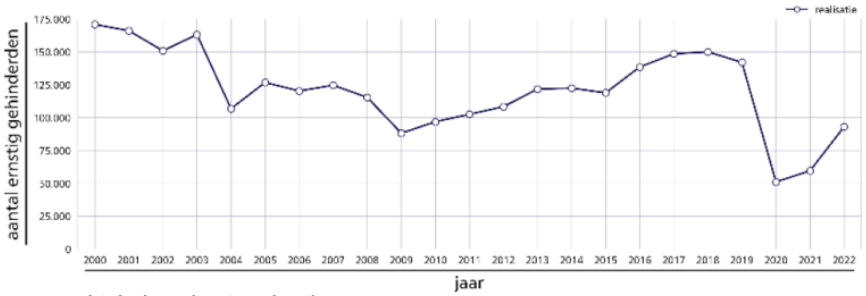
Number of highly annoyed people within 48 dB(A) Lden contour (based on calculated noise exposure)



Bron: To70 - Balanced approach study Schiphol Airport

Historische ontwikkeling (2)

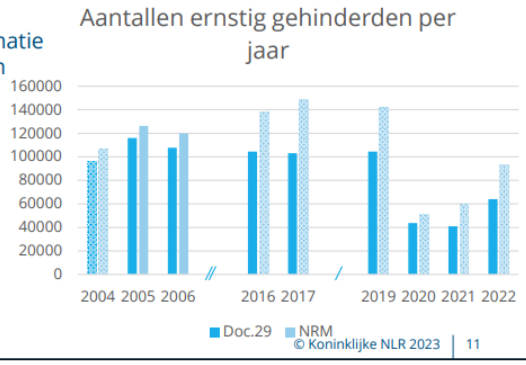
- Gebruiksprognose 2023 geeft inzicht in verloop ernstige hinder over langere periode
- Onderstaande getallen zijn berekend met behulp van NRM
- Toename hinder van 2004 naar 2005 hangt samen met operationele veranderingen bij parallel starten, afname hinder in 2009 hangt samen met daling in aantal bewegingen tov 2008, de afname van de hinder in 2020 hangt samen met de COVID-19 pandemie
- In 2014 is voor het laatst een update van de vliegtuiggegevens voor geluidberekeningen voor Schiphol met NRM uitgevoerd door NLR in opdracht van IenW



Bron: Schiphol, evaluatie gebruiksprognose 2022

Historische ontwikkeling (3)

- Aanvullend is ernstige hinder onderzocht op basis van enkele jaarberekeningen met het Doc.29 rekenmodel
- Deze berekeningen zijn voor een beperkt aantal jaren beschikbaar
- Doc.29 laat kleine toename van de hinder zien in 2019 tov 2004
- Verschil met trend tov NRM mede doordat nieuwe (stillere) types niet in NRM invoergegevens zitten
- In 2014 voor het laatst nieuwe vliegtuiggegevens toegevoegd aan invoerdata NRM, Doc.29 bevat wel gegevens voor nieuwe vliegtuigtypes
- De getoonde gegevens zijn deels gebaseerd op informatie van Schiphol en deels afkomstig uit NLR berekeningen en maken gebruik van woninggegevens uit 2005 (conform gebruiksprognose Schiphol)
- Gegevens 2004 zijn gearceerd ivm eerder genoemde problematiek met parallel starten in dat jaar, NRM gegevens na 2014 zijn gearceerd omdat de NRM invoergegevens na dat jaar niet meer geactualiseerd zijn
- Vanwege beperkte tijd van consultatie kon slechts een beperkt aantal jaren doorgerekend worden



Analyse geluidreducerende maatregelen (1)

Het effect van diverse geluidreducerende maatregelen is geanalyseerd:

- Methode op hoofdlijnen conform aanpak in rapport “Balanced approach study Schiphol Airport”
- Referentiesituatie gebaseerd op gebruiksprognose 2023 met:
  - 500.000 bewegingen, waarvan 32.000 nachtbewegingen
  - Jaarlijks 0,1 dB reductie voor landingen en 0,2 dB reductie voor starts om het gemiddelde effect van vlootverstilling te simuleren
  - Landingen worden doorgerekend met een reduced-flap nadering indien daarvoor gegevens beschikbaar zijn voor de berekening
  - Landingen op banen 18C en 06 worden doorgerekend met continue daalvlucht (CDA) tijdens een landingspiek met 2+1 baangebruik indien daarvoor gegevens beschikbaar zijn voor de berekening

Analyse geluidreducerende maatregelen (2)

Verschillen met aanpak in "Balanced approach study Schiphol Airport":

- Berekening met publieke versie van Doc.29 (https://vliegtuiggeluid.nlr.nl) ipv Schiphol noise modelling tool (SCM), beide modellen zijn op basis van Doc.29 maar hanteren niet dezelfde database met geluidgegevens
  - Zo bevat de ene database informatie over de geluidproductie van bepaalde combinaties van vliegprocedure, route, dagperiode en vliegtuigtype, terwijl die informatie in de andere data base ontbreekt
  - Andere vliegroutes gebruikt om de hoeveelheid geluid per combinatie van vliegprocedure, route, dagperiode en vliegtuigtype te bepalen
- Berekening van het totale maatregelenpakket met detailinformatie over inzet vloot KLM:
  - Effecten afname vliegtuigbewegingen op vlootsamenstelling meegenomen
  - Optimalisatie van de KLM-vloot gedurende de nacht meegenomen
- Aanvullende informatie gebruikt mbt vloot Transavia, Martinair en Delta
- Berekeningen zijn uitgevoerd op basis van de prognose van gebruiksjaar 2023 voor gemiddelde weersomstandigheden, niet voor omhullende obv 40 meteojaren
- Tellingen van woningen en personen op basis van woningbestand 2005 (conform gebruiksprognose Schiphol)
- Om het effect van verschillen in modellering te toetsen zijn uitkomsten van NLR berekeningen vergeleken met resultaten uit het rapport "Balanced approach study Schiphol Airport", dit laat zien dat resultaten dezelfde orde grootte hebben
- Deze vergelijking geeft aan dat het gebruik maken van een andere database, het niet gebruik maken van verschillende meteojaren en het gebruik maken van het woningbestand 2005 weliswaar tot andere resultaten leidt, maar dat de resultaten wel dezelfde trends laten zien en van dezelfde orde grootte zijn

Analyse geluidreducerende maatregelen (3)

- De volgende geluidmaten zijn berekend
  - Lden (Day-Evening-Night Level):
    - Dit is de geluidbelasting over het gehele etmaal
    - Verkeer in de avond en nacht weegt zwaarder mee omdat dit meer hinder geeft
    - De Lden is berekend voor het verkeer gedurende een geheel jaar
  - Lnight (Night Level):
    - Dit is de geluidbelasting voor verkeer in de nacht (van 23:00u tot 07:00u)
    - De Lnight is berekend voor het verkeer gedurende een geheel jaar
- Op basis van deze berekeningen zijn de volgende parameters bepaald:
  - Het aantal ernstig gehinderden binnen 48 dBA Lden
  - Het aantal woningen binnen 58 dBA Lden
  - Het aantal ernstig slaapverstoorden binnen 40 dBA Lnight
  - Het aantal woningen binnen 48 dBA Lnight
- Voor deze parameters zijn door IenW reductiedoelstellingen gedefinieerd van respectievelijk -20%, -20%, -15% en -15%

Analyse geluidreducerende maatregelen (4)

- Als eerste stap zijn de volgende geluidreducerende maatregelen geanalyseerd:
  - Vlootvernieuwing KLM, Transavia, Martinair en Delta Air Lines (A1)
  - Promoten van stillere toestellen mbv luchthavengelden (A2)
  - Inzet stillere toestellen in de nacht (A3)
  - Gebruik NADP2 startprocedures (C1)
  - Vluchten met privévliegtuigen reguleren (D1)
- De codering (A1, A2, enz.) sluit aan bij de door KLM ingediende zienswijze op de balanced approach
- Met dit eerste maatregelenpakket worden de doelstellingen niet behaald
- Om de doelstellingen te behalen is via een iteratief proces gezocht naar de benodigde reductie van het aantal vliegtuigbewegingen in zowel de nacht als in totaal, hierbij wordt de reductie van het totale aantal bewegingen (D2) en het aantal bewegingen in de nacht (D3) gecombineerd beschouwd
- Op basis van deze optimalisatie is uiteindelijk gekozen voor een scenario met 481.200 vliegtuigbewegingen waarvan 28.500 nachtbewegingen
- Daarom zijn de hierna volgende berekeningen uitgevoerd met een scenario met die aantallen bewegingen
- De gevonden reducties per maatregel zijn tov een scenario met dit aantal bewegingen zonder aanvullende maatregelen
- De effecten van deze maatregelen worden hierna individueel besproken
- Reducties of toenames van minder dan 1% worden in een lichtere kleur getoond omdat dit kleine effecten betreft

A1 - Vlootvernieuwing KLM, Transavia, Martinair en Delta

Algemene beschrijving

- Voor KLM, Transavia, Martinair en Delta Air Lines is vlootvernieuwing in detail bekend
- Nieuwe toestellen produceren minder geluid dan huidige generatie
- Realistische vervanging van bestaande vloot door nieuwe toestellen
- Resultaten tonen de afname van de parameters tov de referentiesituatie met autonome vlootverstilling
- Voor toestellen uit de vloot van KLM, Transavia, Martinair en Delta die niet vervangen worden is geen autonome vlootverstilling meegenomen

parameter	reductie
EGH 48 dBA L_{den}	-3,2%
Woningen 58 dBA L_{den}	-2,8%
SV 40 dBA L_{night}	-1,7%
Woningen 48 dBA L_{night}	-1,8%

A2 - Promoten van stillere toestellen

Algemene beschrijving

- Stuur met luchthavengelden op gebruik van stillere toestellen
- Doel is om verkeer uit categorieën S1 en S2 van de havengelden te verstillen door verkeer uit categorieën S6 en S7
  zie voor de categorieën www.schiphol.nl/nl/route-development/pagina/ams-airport-charges-levies-slots-and-conditions/
- Geeft verstilling van een deel van de vliegtuigbewegingen
- Alleen effect op niet home-carriers
- Effect berekend voor verstilling van 33% van het verkeer
- De berekende effecten geven inzicht in de aanvullende verstilling bovenop de jaarlijkse verstilling zoals aangenomen in de referentiesituatie
- Kleine toename woningen en slaapverstoring in de nacht verhouding tussen verkeer waarvoor wel en geen geluidgegevens beschikbaar zijn verandert en door iets veranderend routegebruik

parameter	reductie
EGH 48 dBA L_{den}	-2,6%
Woningen 58 dBA L_{den}	-2,1%
SV 40 dBA L_{night}	0,1%
Woningen 48 dBA L_{night}	0,6%

A3 - Inzet stillere toestellen in de nacht

Algemene beschrijving

- Optimaliseer de vlootinzet van KLM zodat in de nacht stillere toestellen vliegen
- Dit kan door:
  - Vervangen van toestellen door vergelijkbaar stiller type indien alternatief toestel beschikbaar is en indien dit operationeel mogelijk is
  - Verplaats een deel van de lange afstandsvluchten uit de nacht naar de ochtend en vervang deze door vluchten over kortere afstand (met kleinere en stillere die daarmee van de ochtend naar de nacht verplaatst worden
- Indien andere maatschappijen ook verstillen in de nacht kan het effect van deze maatregel vergroot worden

parameter	reductie
EGH 48 dBA L_{den}	-1,2%
Woningen 58 dBA L_{den}	-1,9%
SV 40 dBA L_{night}	-7,4%
Woningen 48 dBA L_{night}	-13,5%

C1 - Gebruik NADP2 startprocedures

Algemene beschrijving

- Voer starts uit met NADP2-800ft startprocedure
- Effect doorgerekend mbv DAISY rekentool
- Daar waar geen gegevens voor NADP2-800ft beschikbaar zijn, is indien mogelijk een andere NADP2 startprocedure geselecteerd
- Niet voor alle starts kon een NADP2 start doorgerekend worden, voor bijna 9% van de starts is alsnog een NAPD1 startprocedure doorgerekend
- Daardoor zijn mogelijk grotere reducties te verwachten indien alle starts gebruik maken van een NADP2-800ft procedure

parameter	reductie
EGH 48 dBA L_{den}	-4,3%
Woningen 58 dBA L_{den}	-0,9%
SV 40 dBA L_{night}	-5,2%
Woningen 48 dBA L_{night}	-3,3%

Bron: KLM, obv DAISY berekening

D1 – vluchten met privévliegtuigen reguleren

Algemene beschrijving

- Alleen nog vluchten met privévliegtuigen binnen het eventuele surplus van het aantal bewegingen met groothandelsverkeer van en naar Schiphol
- In lijn met het rapport 'Balanced approach study Schiphol Airport' is de hinder tgv dit verkeer meegenomen door het aantal vliegtuigbewegingen op te schalen met een factor van 2,5%
- Deze factor wordt niet meer meegenomen om het effect van deze maatregel te bepalen
- Doordat de factor op alle bewegingen gezet wordt heeft deze maatregel zowel een effect op de Lden als op de Lnight geluidbelasting

parameter	reductie
EGH 48 dBA L_{den}	-3,2%
Woningen 58 dBA L_{den}	-3,3%
SV 40 dBA L_{night}	-3,2%
Woningen 48 dBA L_{night}	-3,9%

Gecombineerd effect maatregelen

Gezamenlijk effect van combinatiepakket zonder en met effect van NADP2 800ft startprocedures

combinatie maatregelen A1, A2, A3 en D1:

parameter	reductie
EGH 48 dBA L_{den}	-10,5%
Woningen 58 dBA L_{den}	-13,4%
SV 40 dBA L_{night}	-12,9%
Woningen 48 dBA L_{night}	-19,9%

combinatie maatregelen A1, A2, A3, C1 en D1:

parameter	reductie
EGH 48 dBA L_{den}	-14,8%
Woningen 58 dBA L_{den}	-14,3%
SV 40 dBA L_{night}	-18,1%
Woningen 48 dBA L_{night}	-23,2%

Resultaat:

- Hiermee zijn de doelen voor de nacht (reductie > 15%) behaald
- Hiermee zijn de reductiedoelen voor het gehele etmaal (reductie < 20%) niet behaald, daarom zijn aanvullende maatregelen onderzocht

Aanvullende geluidreducerende maatregelen

De volgende aanvullende geluidreducerende maatregelen zijn geanalyseerd:

- Exploitatiebeperkingen door middel van een reductie van het aantal vliegtuigbewegingen:
  - Reductie totaal aantal vliegtuigbewegingen (D2)
  - Reductie aantal vliegtuigbewegingen in de nacht (D3)
- Maatregelen D2 en D3 zijn een combinatiepakket en zijn in samenhang beschouwd
- Het effect beide maatregelen wordt wel eerst individuele besproken alvorens het gezamenlijke effect aan bod komt

D2 - Reductie totaal aantal vliegtuigbewegingen

Algemene beschrijving

- Verlaag het totale aantal vliegtuigbewegingen (gedurende het hele etmaal) naar 481.200 bij een gelijkblijvend aantal nachtbewegingen
- Een lager aantal vliegtuigbewegingen leidt tot een lagere geluidbelasting
- Reducties zijn bepaald tov referentiesituatie met 500.000 vliegtuigbewegingen en 32.000 nachtbewegingen
- Maatregel D2 wordt hier los beschouwd maar is uiteindelijk bedoeld als onderdeel van een combinatiepakket bestaande uit maatregelen D2 en D3

parameter	reductie
EGH 48 dBA L_{den}	-3,8%
Woningen 58 dBA L_{den}	-3,4%
SV 40 dBA L_{night}	-0,0%
Woningen 48 dBA L_{night}	-0,0%

D3 - Reductie aantal vliegtuigbewegingen in de nacht

Algemene beschrijving

- Verlaag het aantal vliegtuigbewegingen in de nacht naar 28.500 bij een gelijkblijvend totaal aantal bewegingen
- Een lager aantal vliegtuigbewegingen in de nacht leidt tot een lagere geluidbelasting
- Reducties zijn bepaald tov referentiesituatie met 500.000 vliegtuigbewegingen en 32.000 nachtbewegingen
- Maatregel D3 wordt hier los beschouwd maar is uiteindelijk bedoeld als onderdeel van een combinatiepakket bestaande uit maatregelen D2 en D3

parameter	reductie
EGH 48 dBA L_{den}	-3,3%
Woningen 58 dBA L_{den}	-3,4%
SV 40 dBA L_{night}	-14,1%
Woningen 48 dBA L_{night}	-16,0%

Uiteindelijk maatregelenpakket (1)

Op basis van voorgaande analyses is de hinderreductie van de volgende maatregelen berekend:

- Vlootvernieuwing KLM, Transavia, Martinair en Delta Air Lines (A1)
- Promoten van stillere toestellen mbv luchthavengelden (A2)
- Inzet stillere toestellen in de nacht (A3)
- Gebruik NADP2 startprocedures (C1)
- Exploitatiebeperkingen:
  - Vluchten met privévliegtuigen reguleren (D1)
  - Reductie aantal vliegtuigbewegingen
    - Reductie totaal aantal vliegtuigbewegingen (gedurende het hele etmaal) (D2)
    - Reductie totaal aantal vliegtuigbewegingen in de nacht (D3)

Uiteindelijk maatregelenpakket (2)

- Gezamenlijk effect van dit combinatiepakket zonder effect van NADP2 800ft startprocedures
- Bij deze analyse zijn vliegschema's van KLM, Transavia, Martinair en Delta Air Lines meegenomen in de berekeningen

parameter	reductie
EGH 48 dBA L_{den}	-16,9%
Woningen 58 dBA L_{den}	-19,8%
SV 40 dBA L_{night}	-25,1%
Woningen 48 dBA L_{night}	-32,7%

Uiteindelijk maatregelenpakket (3)

Indien effect van NADP2 800ft startprocedures (C1) wordt opgeteld bij de resultaten op de voorgaande slide geeft dit de volgende totale reducties

parameter	reductie
EGH 48 dBA L_{den}	-21,2%
Woningen 58 dBA L_{den}	-20,7%
SV 40 dBA L_{night}	-30,3%
Woningen 48 dBA L_{night}	-36,0%

Resultaat:

- Hiermee zijn de doelen voor zowel de nacht (reductie > 15%) als voor het gehele etmaal (reductie < 20%) behaald

Mogelijke aanvullende maatregelen (1)

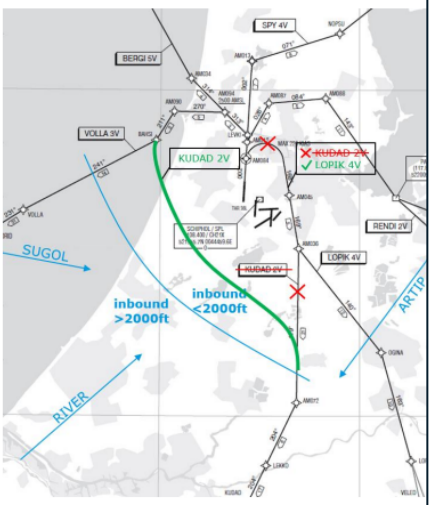
Naast het maatregelenpakket zijn diverse andere mogelijke geluidreducerende maatregelen geïdentificeerd:

- Deze maatregelen zijn niet op de shortlist terecht gekomen, bijvoorbeeld omdat:
  - Ze niet binnen de door IenW gestelde termijn geïmplementeerd kunnen worden
  - Ze minder kostenefficiënt zijn dan de gekozen maatregelen
- De meeste van deze maatregelen vergen nader onderzoek van LVNL
- De implementatie van deze maatregelen kan alleen in samenwerking met andere partners zoals de verkeersleiding
- Deze maatregelen kunnen in de toekomst eventueel uitgewerkt worden om aanvullende hinderreductie mee te behalen

Mogelijke aanvullende maatregelen (2)

Mogelijke maatregelen indien aanvullende reducties nodig zijn:

- Alternatief voor KUDAD routes (C2), de LOPIK 4V blijft wel de originele route volgen
- Deze route loopt boven zee en geeft dus minder hinder
- De route kan vervolgens weer aansluiten op de huidige route
- Kan negatief effect hebben op capaciteit doordat hoeveelheid verkeer naar het westen toeneemt
- Kan leiden tot omvliegen en dus meer brandstofverbruik
- Dit vergt nader onderzoek LVNL
- Indicatieve KLM berekening mbt DAISY geeft aan dat wellicht een reductie van 2,5% ernstig gehinderden binnen de 48 dBA Lden contour mogelijk is



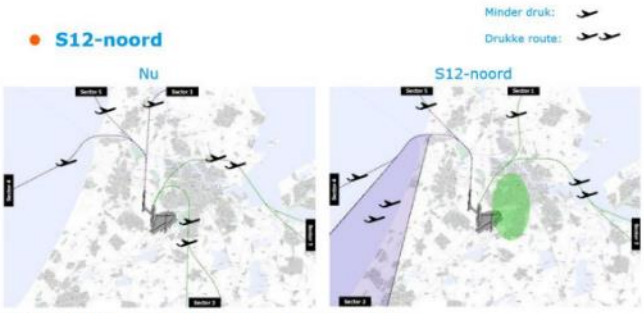
Bron: KLM

Mogelijke aanvullende maatregelen (3)

- Verhoging ILS naderingshoogte (C3)
- Huidige hoogtes zijn 2000 en 3000 voet, deze niveaus verhogen tot respectievelijk 3000 en 4000 voet
- Verdere verhoging kan grotere reductie geven, maar zal ook grotere verschillen tov huidige operatie geven
- Zeer indicatieve eerste berekening laat mogelijke reductie van ernstige hinder met ongeveer 4,5% zien
- Effect op woningen binnen 58 dBA Lden zal duidelijk kleiner zijn en het effect op slaapverstoring en woningen binnen 40 dBA Lnight zal nihil zijn
- Deze reductie dient nader onderzocht te worden alvorens maatregel doorgevoerd wordt omdat nu onvoldoende gegevens beschikbaar waren voor een nauwkeurige analyse
- Daarnaast vergt implementatie ook nader onderzoek door LVNL omdat huidige werkwijze van luchtverkeersleiders moet worden aangepast
- Daarom vergt implementatie training voor luchtverkeersleiders

Mogelijke aanvullende maatregelen (4)

- Veranderen van noordelijke vertrekroutes richting sector 1 en 2 (C4)
- Kan negatief effect hebben op capaciteit doordat verkeer in bepaalde sectoren geconcentreerd wordt
- Dit vergt nader onderzoek LVNL
- Eerder onderzoek spreekt over een mogelijke reductie van 6.450 ernstig gehinderden binnen de 48 dBA Lden contour
  Bron: To70 - Outbound traffic segregation at Schiphol Airport, A roadmap towards traffic segregation concepts



Bron: To70, aangevuld met informatie KLM

Mogelijke aanvullende maatregelen (5)

- *Veranderen van S12 Zuid vertrekprocedures*
  Verkeer vertrekt via andere zuidelijke routes richting sector 1 en 2 (C5)
- Kan negatief effect hebben op capaciteit doordat verkeer in bepaalde sectoren geconcentreerd wordt
- Dit vergt nader onderzoek LVNL
- Eerder onderzoek spreekt over reductie van 4.600 tot 5.600 ernstig gehinderden binnen de 48 dBA Lden contour afhankelijk van gekozen implementatie
  Bron: To70 - Outbound traffic segregation at Schiphol Airport, A roadmap towards traffic segregation concepts

Bron: To70, aangevuld met informatie KLM

Mogelijke aanvullende maatregelen (6)

- Zoveel mogelijk landen op baan 24 ipv baan 27 in de nacht (C6)
  - Hierbij wordt minder dichtbevolkt gebied overvlogen
  - Een indicatieve DAISY berekening door KLM laat zien dat hiermee mogelijk:
    - een reductie van ongeveer 1,2% van het aantal ernstig gehinderden binnen 48 dBA Lden behaald kan worden
    - een reductie van ruim 3% van het woningen binnen 58 dBA Lden behaald kan worden
  - Deze effecten zijn berekend voor een scenario waarbij starts zoveel mogelijk gebruik maken van een NADP2 procedure, de reductie is bepaald tov een referentie waarin dezelfde NADP2 procedures gehanteerd worden

Mogelijke aanvullende maatregelen (7)

- Verhogen van de ILS naderingshoek van 3,00 naar 3,25 graden (C7)
  - Door een steilere naderingshoek vliegt landend verkeer hoger tijdens de laatste fase van de nadering, wat resulteert in een (kleine) afname in geluidniveaus op de grond
  - Bij steilere naderingen kan een (iets) lager motorvermogen gehanteerd worden wat een kleine aanvullende geluidreductie oplevert
  - Steilere hoeken dan 3,25 graden zijn ook mogelijk, maar dit kan leiden tot operationele beperkingen
  - Eerste praktijktesten zijn reeds uitgevoerd (zie bijvoorbeeld https://www.nlr.nl/testvluchten-twenteairport/), maar hier is nog wel nader onderzoek door LVNL nodig naar de haalbaarheid voor implementatie op Schiphol
- RNP-AR: optimalisatie aankomstprocedures (C8)
  - Gebruik RNP-AR (Required Navigation Performance Authorisation Required) voor aankomstprocedures
  - Dit is een navigatietechniek waarmee getracht kan worden om meer om woonkernen heen te vliegen
  - Dit kan lokaal hinderreductie opleveren

Beschouwing maatregelen IenW (1)

Door IenW zijn diverse hinderbeperkende maatregelen voorgesteld
Dit betreft zowel zaken die onderdeel zijn van de referentiesituatie als maatregelen om hinder te reduceren

Een aantal van deze maatregelen worden hierna besproken:

- Default CDA-procedure RWY18C en RWY06 (C9)
  - Maatregel is meegenomen binnen de autonome ontwikkeling
  - maatregel kan niet toegepast worden voordat luchtruimherziening in 2026 geïmplementeerd is
  - daarvoor mag een negatief effect op capaciteit verwacht worden
  - Het lijkt niet reëel dat deze maatregel in 2024 in werking getreden is
  - als tussenstap zou overwogen kunnen worden om glijvluchten vanaf een lagere hoogte dan kruishoogte, bijvoorbeeld 6000 voet, te introduceren

Beschouwing maatregelen IenW (2)

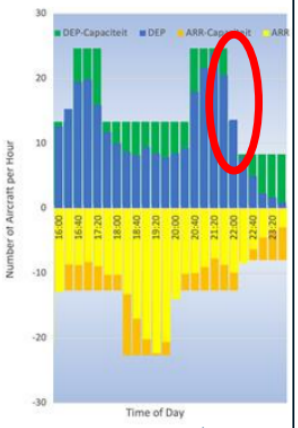
Hierna wordt nader ingegaan op enkele door IenW voorgestelde maatregelen:

- Maatregel om het gebruik van stillere toestellen te stimuleren dmv luchthaventarieven (A2):
  - Hier worden alleen toestellen uit categorie S1 meegenomen
  - Daardoor missen bijvoorbeeld de B737-800 en B737-900, terwijl types zijn die vervangen kunnen worden door de B737MAX of A320NEO
  - Ook andere types zoals B747-400, B757 en B777 worden niet meegenomen
- Reduced Flaps aankomstprocedure (C10):
  - Deze maatregel is meegenomen binnen de autonome ontwikkeling
  - De reduced flap procedure wordt reeds toegepast bij een deel van de landingen op Schiphol (ook omdat dit een brandstofbesparing oplevert
  - Deze maatregel is besproken met KLM vliegers
  - Hun expert judgement is dat deze maatregel niet verplicht kan worden voorgeschreven omdat maatregel niet altijd toepasbaar is ivm veiligheid en/of operationele beperkingen
  - Daarnaast kan het gebruik van de reduced flaps aankomstprocedure de komende jaren mogelijk iets afnemen indien voldaan moet worden aan limieten voor de tijd dat een vliegtuig zich op de baan bevindt (reduced flaps geeft een hogere landingssnelheid, waardoor het vliegtuig zich langer op de baan bevindt voordat het toestel voldoende is afgeremd om de baan te verlaten)

Beschouwing maatregelen IenW (3)

Verlenging nachtregime (C11)

- Twee varianten van het verlengen van het nachtregime zijn uitgewerkt in Balanced Approach studie
- Maatregel geeft lagere capaciteit, hetgeen tot vertragingen kan leiden
- Bij verlenging nachtregime in de avond kunnen avondvluchten vertraagd worden tot in de nacht, met twee mogelijke effecten:
  - Toename van geluidbelasting en dus meer geluidhinder, slaapverstoring en geluidbelaste woningen
  - Meer nachtvluchten waardoor nachtvluchtenlimiet overschreden kan worden
- De figuur toont de vertrek (groen) en aankomstcapaciteit (oranje)
- Ook toont de figuur het gemiddelde verkeersaanbod (blauw voor starts, geel voor landingen) obv verkeer in 2019 per tijdsblok van 20 minuten
- Dit laat zien dat het invoeren van het nachtregime vanaf 21:40u kan leiden tot vertragingen waardoor avond verkeer in de nacht moet worden afgehandeld (het rood omcirkelde deel van de figuur laat zien dat hier meer capaciteit gevraagd wordt dan tijdens beschikbaar het nachtregime beschikbaar is)



Beschouwing maatregelen IenW (4)

Verlenging nachtregime (C11) - vervolg

- Indien gemiddeld 10 bewegingen naar de nacht vertragen geeft dit 1,7% meer ernstige hinder en 10% meer slaapverstoring
- Door dit effect wordt de reductie van ernstig gehinderden en de reductie van aantallen woningen binnen de 58 dBA Lden contour tgv deze maatregel tenminste deels teniet gedaan
- Door dit effect nemen slaapverstoring en het aantal woningen binnen de 48 dB(A) Lnight contour toe

Gedeeltelijke sluiting baan 09/27 (Buitenveldertbaan) (C12):

- Maatregel is meegenomen als hinderreducerende maatregel
- Baan wordt nu oa gebruikt indien baangebruik verandert, onduidelijk wat effect is als dit niet meer kan
- Implementatie vergt nadere analyse LVNL

Beschouwing maatregelen IenW (5)

Verlagen gebruik secundaire banen (C13)

- Maatregel is meegenomen als hinderreducerende maatregel
- Indien vertragingen ontstaan moeten deze tijdens pieken worden weggewerkt, wat kan leiden tot meer secundair baangebruik
- Om de volgende redenen is een effect op de capaciteit te verwachten:
  - Het aantal beschikbare banen tijdens deze periodes gaat van 2 naar 1
  - Doordat nog maar 1 baan beschikbaar is, zal met name de afhandeling van landend verkeer complexer worden omdat verkeer uit diverse richtingen op dezelfde baan moet landen, dit kan zorgen voor een aanvullende capaciteitsreductie bovenop het effect van de reductie van het aantal beschikbare banen
- Daarom is voor invoering van deze maatregel onderzoek van de LVNL nodig naar het effect op de capaciteit

Toekomstige ontwikkeling ernstige hinder (1)

Om inzicht te geven in ontwikkelingen tot en met 2030 is het volgende gedaan:

- Analyses tot en met 2030 met daarin:
  - Het effect van de diverse hinderbeperkende maatregelen (A1, A2, A3, C1 en D1)
  - Vlootvernieuwing bij KLM, Transavia en Martinair, ook rekening houdend met de ontwikkeling van de vloot na 2025
  - Autonome vlootverstilling bij andere luchtvaartmaatschappijen
- De analyses geven inzicht in de ontwikkeling van aantallen ernstig gehinderden in de toekomst
- Toekomstontwikkelingen zijn onderzocht voor de volgende scenario's met verschillende aantallen vliegtuigbewegingen (zowel gedurende het hele etmaal als in de nacht):
  - Business as usual: 500.000 bewegingen in totaal, waarvan 32.000 in de nacht
  - Aantallen in lijn met maatregelencombinatie D uit het rapport 'Balanced approach study Schiphol Airport': 440.000 bewegingen in totaal, waarvan 29.000 in de nacht
  - Aantallen in lijn met het combinatiepakket zoals eerder benoemd in deze presentatie: 481.200 bewegingen in totaal, waarvan 28.500 in de nacht

Toekomstige ontwikkeling ernstige hinder (2)

Uitgevoerde berekeningen:

- Drie scenario's zijn doorgerekend met hinderbeperkende maatregelen die horen bij het betreffende scenario
- Voor het 440 / 29k scenario is alleen vlootverstilling door havengelden meegenomen als maatregel (naast de vlootvernieuwing bij KLM en de autonome vlootverstilling bij andere maatschappijen)
- Bij de andere scenario's zijn naast die maatregelen ook het reguleren van vluchten met privévliegtuigen meegenomen, is nachtoptimalisatie toegepast en zijn de met DAISY berekende reducties tgv NAPD2 startprocedures opgeteld bij de berekende reducties
- Bij een lager maximaal aantal vliegtuigbewegingen kan de inzet van grotere toestellen de jaarlijkse autonome verstilling (deels) ongedaan maken of leiden tot een toename van het gemiddelde geluidniveau per vliegtuigbeweging
- Om dit effect te modelleren is voor het 440 / 29k scenario aangenomen dat vanaf 2025 geen autonome vlootverstilling meer optreedt omdat maatschappijen vanwege het lagere aantal slots grotere toestellen zullen gaan inzetten van en naar Schiphol

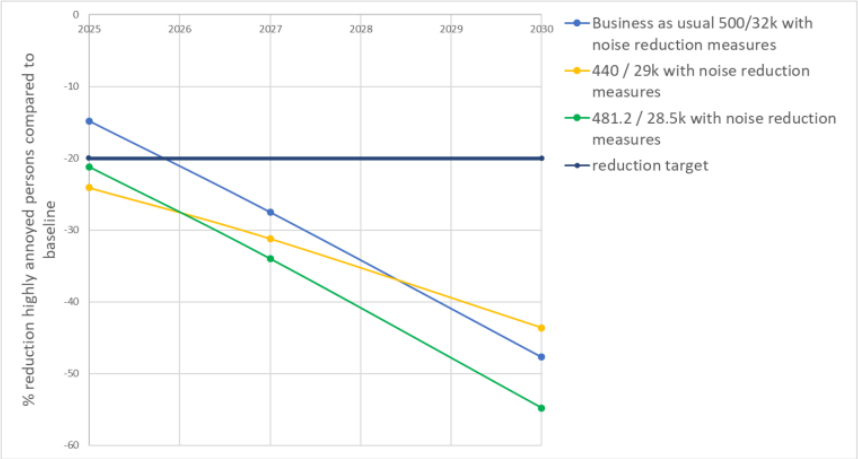
Toekomstige ontwikkeling ernstige hinder (3)

Uitgevoerde berekeningen:

- Voor de reducties in 2025 voor het 481.2 / 28.5k scenario zijn de reducties gebruikt uit de eerder in deze presentatie getoonde analyses
- De reducties in 2025 voor het business as usual scenario zijn bepaald volgens dezelfde aanpak als de resultaten voor het 481.2 / 28.5k scenario, maar dan voor 500 / 32k bewegingen
- Voor de reducties in 2025 voor het 440 / 29k scenario zijn de reducties uit het rapport 'Balanced approach study Schiphol Airport' gebruikt zoals in dat rapport bepaald voor maatregelencombinatie D

Toekomstige ontwikkeling ernstige hinder (4)

De grafiek toont de ontwikkeling van de reductie van het aantal ernstig gehinderden tov de referentiesituatie



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