

Gatwick Departures Community Meeting

31 May 2017



AGENDA

- 09:30 – 10:00 Introduction and background
 - Welcome - Nick Boud
 - The NMB - Bo Redeborn
 - The NMB 2017/2018 workplan - Graham Lake
 - Departures Overview - Andy Sinclair
- 10:00 – 11:00 Local views and insights on departures - Group discussion
- 11:00 – 11:30 Networking Coffee break
- 11:30 – 11:50 Introduction to noise reduction and management techniques
 - A general overview of best practice seen at airports – Helios
- 11:50 – 12:20 Strategic objectives for departures noise management - Group discussion
 - Groups to develop consolidated views for communication to the NMBWG
- 12:20 – 12:30 Summary and Conclusions – Moderator
- 12:30 Meeting close

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Factors affecting departure noise

- Setting aside the ground track, i.e. in terms of departure flight profile, departure noise is dependent on:
 - **Type of aircraft**
 - technology level how much noise is emitted at source
 - **Number of engines**
 - aircraft with 3 or 4 engines are designed to climb less steeply than 2-engined aircraft and certified to higher noise limits
 - **How heavily loaded the aircraft is**
 - short-haul aircraft: passengers, bags and fuel
 - long-haul aircraft: fuel load could be twice the passenger load
 - **Atmospheric conditions:**
 - Stronger headwind helps an aircraft climb
 - **Noise abatement departure procedure**

BEST PRACTICE IN DEPARTURE NOISE REDUCTION AND MANAGEMENT

Noise reduction

Generally reducing noise at source, i.e. making aircraft quieter

Noise redistribution

Use of operational measures to reduce noise in most places

Noise management

Managing the locations affected by noise, e.g. through respite

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Sharing best practice

Promote use of quieter aircraft

For example, use of noise limits to promote quieter aircraft at the airport

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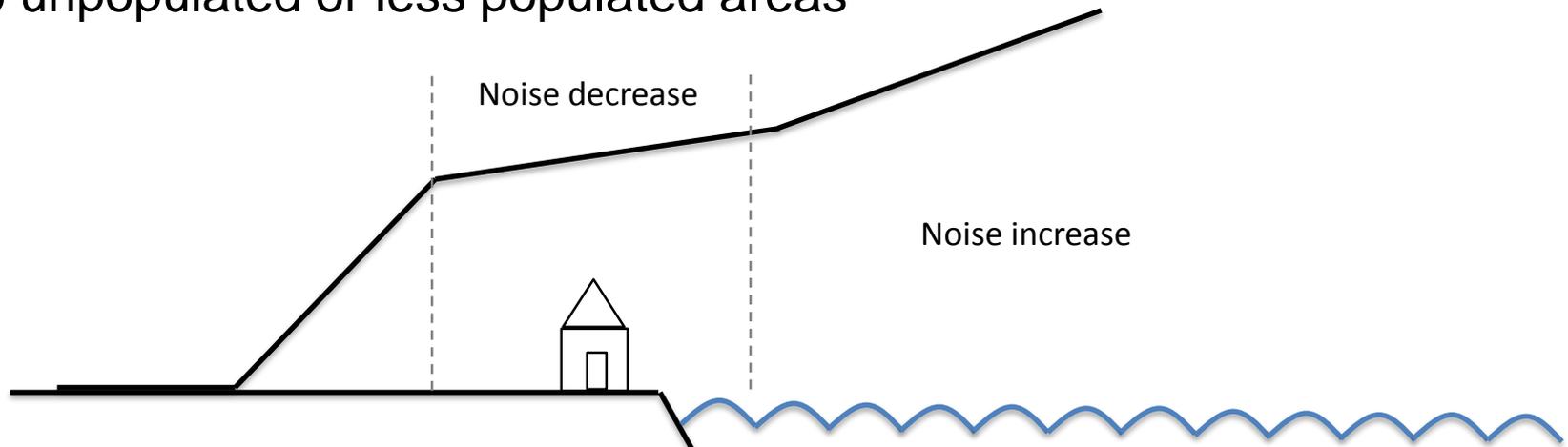
Noise Abatement Departure Procedures (NADP)

Airspace change

For example, to remove altitude constraints

Noise Abatement Departure Procedures

- NADPs can't reduce noise everywhere
 - To gain height at one location, requires:
 - More thrust (energy)
 - Trade speed for height
 - Trade height at one location compared to another location
- In some circumstances can reduce noise impacts by redistributing noise to unpopulated or less populated areas



What constitutes an NADP?

- As an aircraft begins its take-off roll, engine power is set to the take-off power setting
- At the take-off speed, the aircraft is rotated and takes off.
- Shortly after take-off the wheels are retracted.
- No further crew action is permitted until at least 800 feet above ground level.

- Once above 800 feet, two actions are carried out by the flight crew:
 - **Reduce take-off power to the climb power setting**
 - **Accelerate the aircraft to the desired climb speed**
- Both actions shall be initiated no later than 3,000 feet
- Each action takes place at a defined altitude and these constitute the NADP
- Virtually all airlines now incorporate NADPs into their Standard Operating Procedures (SOPs)

ICAO NADP framework

- Sets out that there should be no more than two procedures per aircraft type for a given airline
- The minimum altitude for any noise abatement action shall be 800 feet
- A noise abatement procedure shall be complete by 3,000 feet
- “Nothing in these procedures shall prevent the pilot-in-command from exercising authority for the safe operation of the aeroplane”
- “Noise abatement procedures shall be developed by the aircraft operator for each aeroplane type (with advice from the aeroplane manufacturer, as needed) and approved by the State of the Operator complying at a minimum with the following safety criteria.”

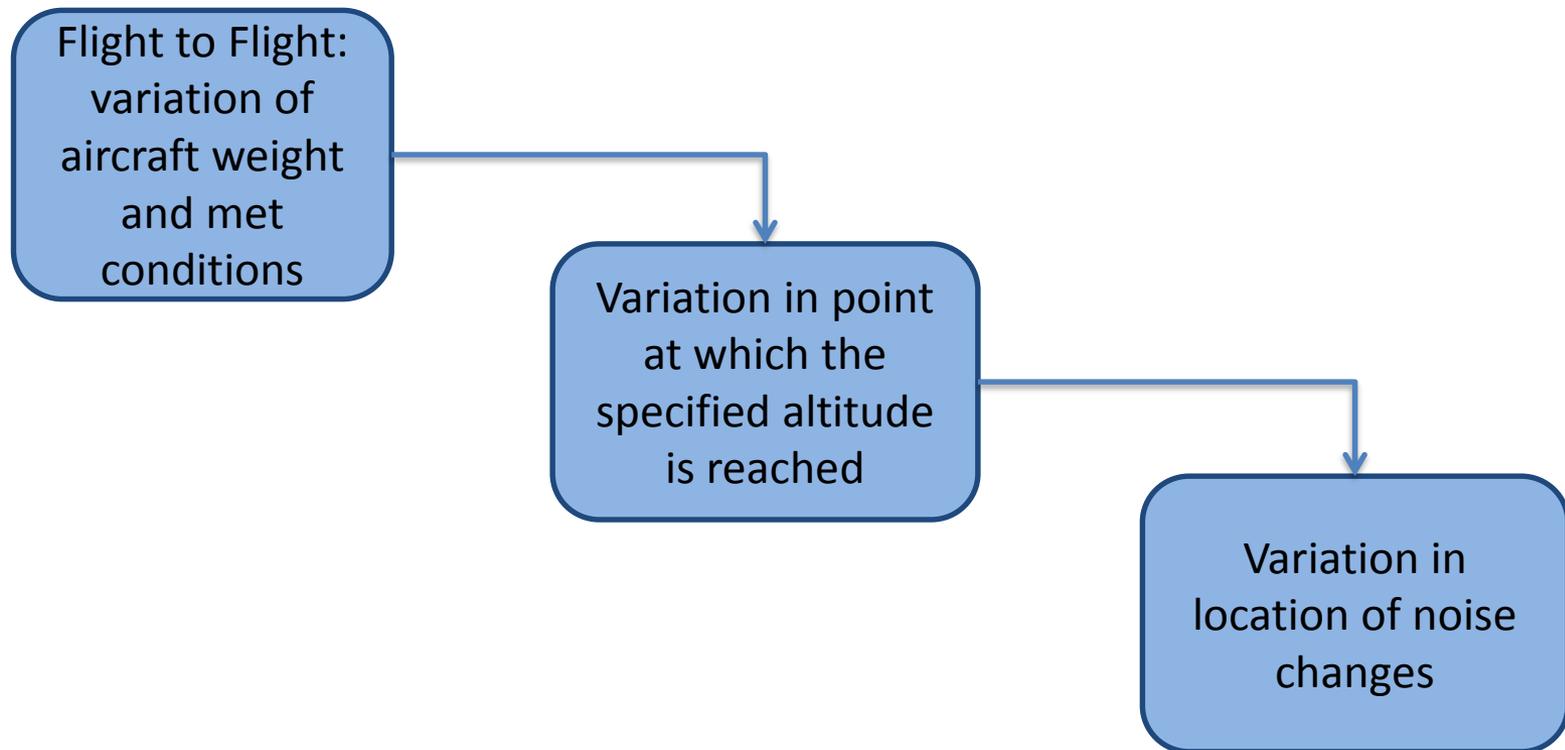
ICAO NADP 1 & 2

- NADP 1 aim of reducing noise closer in to an aerodrome
 - Action 1: At a specific altitude of at least 800 feet, reduce engine power from take-off power setting
 - Action 2: At a specific altitude of at least 800 feet and not more than 3,000 feet, accelerate the aircraft to the desired climb speed

- NADP 2 aim of reducing noise further out from an aerodrome
 - Action 1: At a specific altitude of at least 800 feet and not more than 3,000 feet, accelerate the aircraft to the desired climb speed
 - Action 2: At a specific altitude of at least 800 feet, reduce engine power from take-off power setting

Location of noise redistribution

- NADP actions are initiated at specified altitudes:



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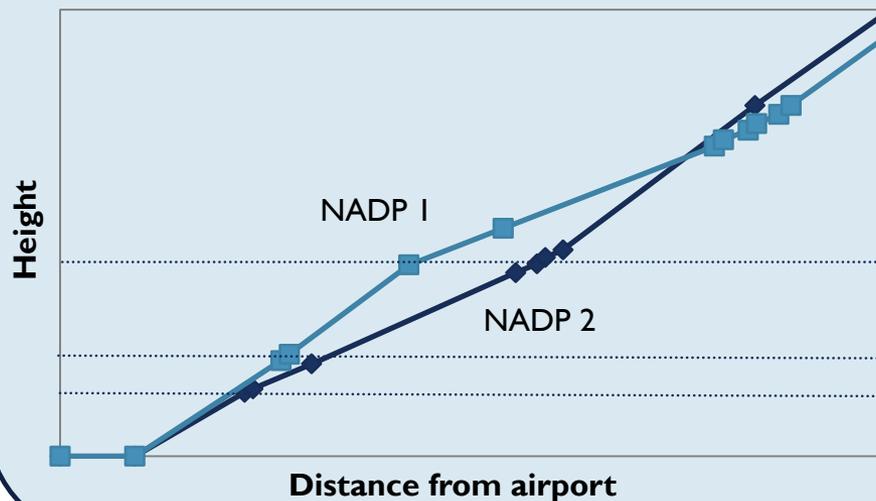
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Definitions:

Relief - a break from or a reduction in aircraft noise.

Respite - a scheduled relief from aircraft noise for a period of time.

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SID rotation or balancing

For example, alternating SIDs during different nights

Increase in minimum vectoring height or change to a vectoring point

To keep aircraft on the SID for longer or to a certain point

Re-designed SIDs within the NPR swathe

For example, “left” and “right” routes within the same SID

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