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## Heathrow DET 09R Steeper Departure Trial

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## ***Background***

The Heathrow Community Noise Forum (HCNF) raised concerns over a gradual lowering of climb performance over recent years.

In response and focussing on the DET09 departure route to ensure capture of A380 flights, Heathrow commissioned multiple studies to investigate. Their findings support the views of the HCNF members. In order to attempt to find potential resolutions to ease community concerns, it is imperative to understand the operational and environmental implications of enforcing any procedural change to departure routes.

## ***Top-level Objectives***

- i. To examine, in detail, the current noise performance and footprints of traffic on the 09R DET 1J departure*
- ii. To then assess the environmental and operational impacts of introducing a steeper climb gradient*

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## *What the DET studies tell us*

Over the last 5 years there has been:

- A significant increase in A380 departures
- Approx. 30 more DET departures per day
- A slight increase in concentration
- A slight lowering in climb performance
- Aircraft are significantly outperforming the IFP SID gradient
- There are many different climb gradients to consider in order to define trial objectives

## *Immediate next steps*

- i. To examine, in detail, the current Climb performance of 09 DET Departures and compare against the varying different climb profile requirements, including their theoretical maximum climb gradients as declared by each airline*
- ii. Continue with RMT deployment to begin baseline capture Jan 2017*

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# *Climb Gradient Language*

## **Noise Abatement Gradient**

Aircraft are required to be at least 1000ft, 6.5Km after the start of their takeoff roll (UK AIP EGLL AD 2.21). From this point, they are required to maintain a gradient of at least 4% until reaching 4000ft AAL. Whilst this is explained in Note2 of the [SID chart](#), it does not actually form part of the Instrument Flight Procedure (IFP) construction itself. i.e. These restrictions are for Noise Abatement purposes only whereas IFP's are designed for obstacle clearance and Controlled Air Space (CAS) containment.

## **DET 1J IFP Gradient**

These are the rates of climb required, assuming the aircraft leaves the runway at the very end (Declared End of Runway (DER)). The only restrictions are those at 3000ft D29 (4.1% from DER), 5000ft D20 (3.9% from DER or 3.7% from DET D29), and 6000ft D16 (3.9% from DER or 4.1% from DET D20), which are for ATC/CAS purposes only. PANS OPS stipulates that a Procedure Design Gradient of 3.3% shall be used for departures, starting 5m above the DER, unless higher is required for obstacle clearance and/or ATC purposes.

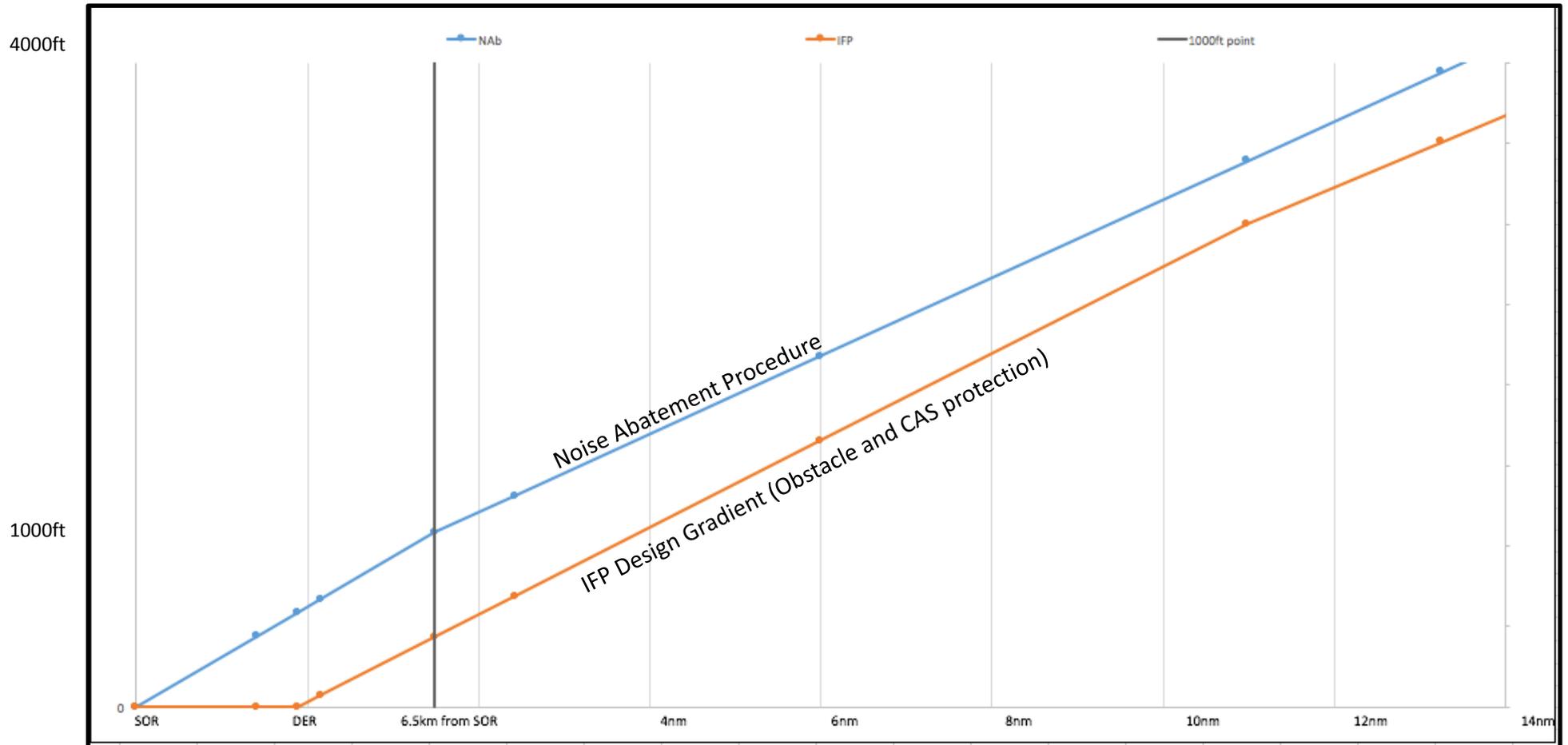
## **Actual Gradient Performed**

These are the actual climb gradients achieved by departures. Taken from ANOMS data, from the first point of radar capture up to the aircraft reaching 4000ft.

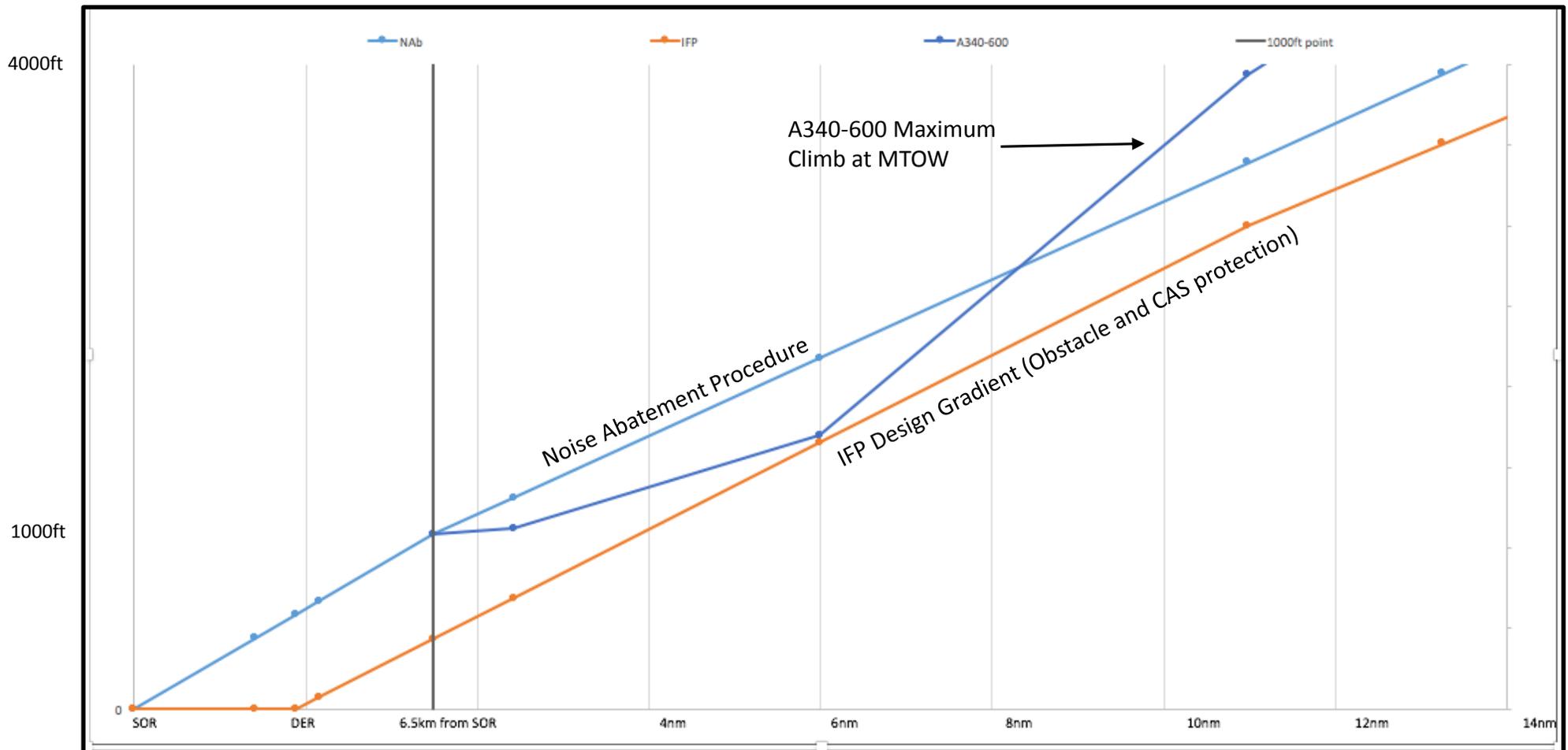
## **Maximum Achievable Gradient**

These are the maximum gradients that airline operators say they are able to make for a specific aircraft type, at Maximum Takeoff Weight and at an assumed maximum temperature according to their current NADP procedure.

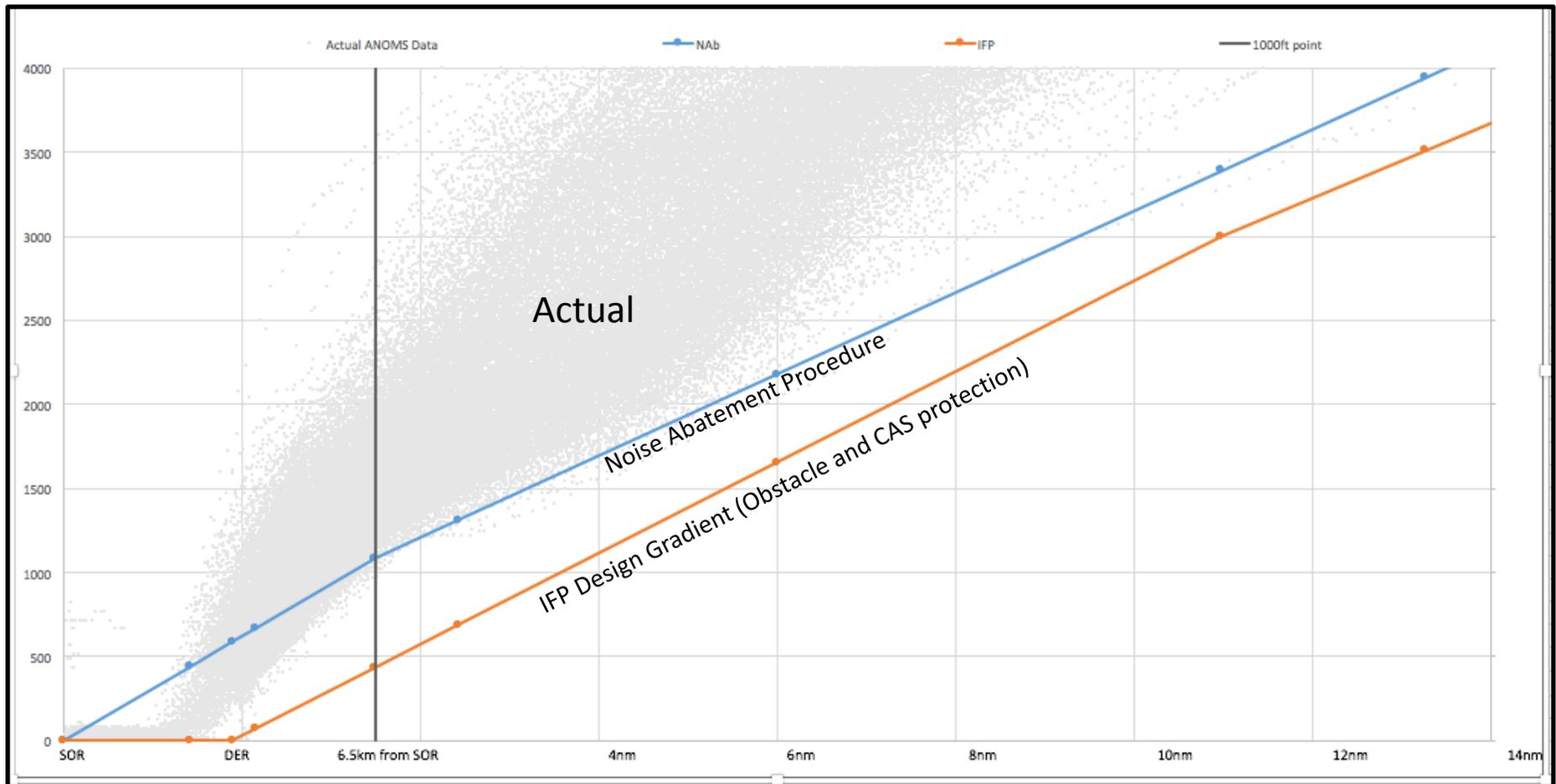
# Noise Abatement v IFP



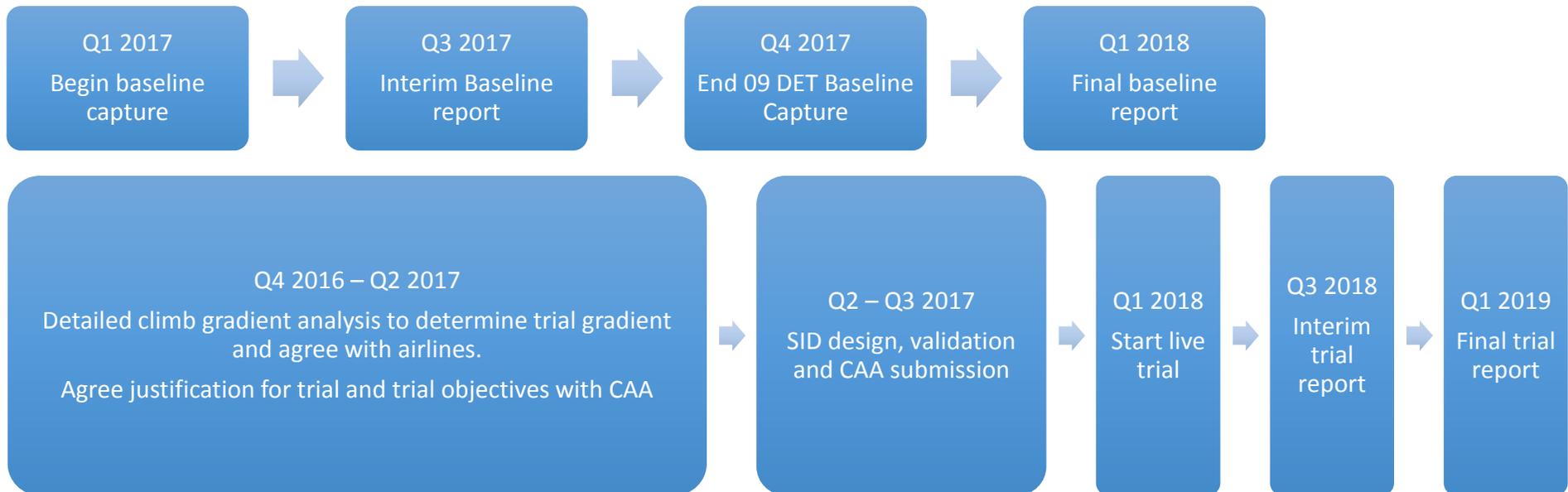
# Noise Abatement v IFP v Maximum (A340 MTOW)



# Noise Abatement v IFP v Actual



# *Current project direction*



## Risks to timeline

- Difficulties in obtaining land owner permissions to deploy Remote Noise Monitoring Terminals
- Difficulty agreeing gradient with airlines
- Delay in obtaining CAA permission for trial
- Delay in CAA IFP approval