Background – SIDS and NPRs

- Aircraft taking off from Heathrow follow pre-defined routes, known as Standard Instrument Departures (SIDs) which were set in the 1960s by the Department for Transport (DfT).

- Each SID has a name - these are based on the geographical headings of each SID, such as Southampton (known as SAM).

- Due to the fact that all aircraft perform differently and may be affected by weather conditions which can cause them to drift left or right, there will be some variation as to where different aircraft will fly relative to the centreline of the SID.

- For this reason, when the SIDs were designed, the Government set corridors, known as Noise Preferential Routes (NPRs), which extend 1.5 kilometres either side of the SID route centreline.
Background – departure routes

• There are 6 departures routes on ‘easterly’ and ‘westerly’ operations

• Aircraft have to follow these routes up to an altitude of 4,000ft.

• The choice of departure route is decided by the airline and is predominately determined by the destination the aircraft is flying to.

• The rate that aircraft climb will vary depending on factors such as:

  • **the type of aircraft** e.g. bigger aircraft will climb more slowly compared with smaller aircraft

  • **weather conditions** e.g. strong winds v. light winds

  • **how fully laden aircraft are** e.g. an A380 flying to the Far East will be carrying a lot more fuel and passengers compared with a smaller aircraft flying to Europe. Likewise an A380 flying to Singapore is likely to be carrying a lot more fuel than an A380 going to Dubai
Analysis

• In order to capture the data, a defined area needs to be selected

• This is done by creating what’s known as a ‘gate’ over a geographical location

• The ‘gate’ is essentially a straight line positioned over an area – the gate can be any length and placed in any direction e.g. vertical, horizontal or diagonal

• The ‘gate’ allows for the data of every aircraft to be captured that passes through the gate

• In this instance – Teddington Action Group decided on the location and length of each gate and wanted to capture all the departures going through the gate on easterly operations
Map of the three ‘gates’ – DVR, SAM and MID
Departures routes

This map shows the three departure routes analysed in this data. The SIDs are the centreline of each route and the NPR is the 3km wide area around each SID.
‘SAM’
departure route analysis
The SAM gate is located across the SAM NPR as illustrated below.
SAM gate 2012 & 2013

The graphs below show the plots of all the aircraft that went through the SAM gate during 2012 & 2013.

These maps show an example day of easterly departures in each of the years.
SAM gate 2014 & 2015

The graphs below show the plots of all the aircraft that went through the SAM gate during 2014 & 2015.

2014

During the trials the SAM route shifted across and merged with the MID route as you can see in the map.

2015 to 1 May

No trials so the SAM route has shifted back across as has the MID route.

These maps show an example day of easterly departures in each of the years.
**SAM gate – aircraft size**

These graphs show the same data as the previous two slides, but this time the data has been categorised by aircraft size – Medium (e.g. A320s), Heavy (e.g. wide body, long haul e.g. 747) and A380.

- **2012**
  - A couple of A380 flights through SAM gate

- **2013**
  - One A380 flight through the SAM gate

- **2014**
  - A380 start appearing on the MID route

- **2015 to 1 May**
  - A380 using MID route but still none to date on SAM

---

**Heathrow**

Making every journey better
This graph gives a daily overview of departures that went through SAM gate from 2011 up to May 2015.

Increased volume due to the airspace trials.
‘MID’
departure route analysis
The MID gate is located across the MID NPR as illustrated below.
MID gate 2012 & 2013

The graphs below show the plots of all the aircraft that went through the MID gate during 2012 & 2013.

These maps show an example day of easterly departures in each of the years.
**MID gate 2014 & 2015**

The graphs below show the plots of all the aircraft that went through the MID gate during 2014 & 2015.

### 2014

These maps show an example day of easterly departures in each of the years. During the trials the MID route shifted across and merged with the SAM route as you can see in this map.

### 2015 to 1 May

No trials so the MID & SAM departures have shifted back across to where they were before the trials.
MID gate – aircraft size

These graphs show the same data as the previous two slides, but this time the data has been categorised by aircraft size - Medium (e.g. A320s), Heavy (e.g. wide body, long haul e.g. 747) and A380.

2012
- Virtually no A380 flights through SAM gate

2013
- Virtually no A380 flights through SAM gate

2014
- A380s start appearing on the MID route

2015 to 1 May
- A380s continue using the MID route
This graph gives a daily overview of departures that went through MID gate from 2011 up to May 2015.

Gaps occur when on westerly operations and there is no departure traffic crossing the gate.
‘DVR’
departure route analysis
(This route did not change during the airspace trials)
The DVR gate is located across the DVR NPR as illustrated below.

**Location of the DVR NPR gate**

- **Left-hand limit of gate**
- **Right-hand limit of gate**
- **Centre of gate**
- **Direction of view**
- **-1500m**
- **+1500m**

Heathrow

Making every journey better
DVR gate 2012 & 2013

The graphs below show the plots of all the aircraft that went through the DVR gate during 2012 & 2013.

These maps show an example day of easterly departures in each of the years.

---

**2012**

- **DVR NPR 2012**
- **DVR departures during OF trials**
- **DVR SID** + **SAM SID** + **Other SIDs**

- **Height (ft)**
- **Distance from centre of gate (m)**

**2013**

- **DVR NPR 2013**
- **DVR departures during OF trials**
- **DVR SID** + **SAM SID** + **Other SIDs**

- **Height (ft)**
- **Distance from centre of gate (m)**

---

23 September 2012

23 August 2013
DVR gate 2014 & 2015

The graphs below show the plots of all the aircraft that went through the DVR gate during 2014 & 2015.

These maps show an example day of easterly departures in each of the years.

These maps show an example day of easterly departures in each of the years.
DVR gate – aircraft size

These graphs show the same data as the previous two slides, but this time the data has been categorised by aircraft size – Medium (e.g. A320s), Heavy (e.g. wide body, long haul e.g. 747) and A380.

The DVR route is a heavily used route for A380s
This graph gives a daily overview of departures that went through DVR gate from 2011 up to May 2015.

Gaps occur when on westerly operations and there is no departure traffic crossing the gate.
Next steps

• Follow up meeting with Teddington Action Group

• Detailed look at trends in aircraft altitude


• Work with Airbus and BA through the Community Noise Forum to look at departure profiles for A380s