The original DVR SID Truncation request form was submitted to the CAA on the 15th of October 2020. Following CAA IFP regulation review, revisions to some of the details within the form were required. The below form includes the updated details; sections that differ from the original submission are highlighted in yellow.

SID TRUNCATION REQUEST (ACP-2020-051) – SUBMISSION DATE: **23/11/2020**

Existing SID: EGKK DVR 1M 1V (RWY 26)

Proposed SID: MIMFO 1M 1V (RWY 26)

SID Truncation Sponsor Details:

	En-Route ANSP	Airport ANSP	Airport Authority
Unit	NATS Swanwick	ANSL (Gatwick)	Airport Limited (GAL)
Name	[redacted]	[redacted]	[redacted]
	Swanwick Development (Airspace)	General Manager ANS	Regulatory Lead
Contact details			
Phone:	[redacted]	[redacted]	[redacted]
E mail:	[redacted]	[redacted]	[redacted]

1. Stage 1

1.1 Statement of Need

For completeness and ease of reference, insert details from DAP 1916.

The objective of this airspace change proposal is to truncate Gatwick Airport's DVR 1M 1V SIDs in accordance with the extant SID truncation process policy.
The current conventional RWY26 DVR SIDs from Gatwick have long sections where the flight profile is limited to 6000ft however typically aircraft climb above 6000ft earlier. Truncation of these SIDs would offer the potential for economic and environmental benefits through decreased fuel consumption as aircraft will not be required to fuel for the full procedural SID profile.
It is proposed that the conventional DVR 1M 1V SIDs will be truncated to a position very close to ADMAG, but not ADMAG itself as to do so would require a change to the radial to DVR for the DVR 1M 1V SIDs. The truncation position will be located at DVR D33 on DVR R278 and the truncated section will be replaced by Area Navigation Route Y312. It is anticipated that a minor realignment of the Y312 airway would be required to achieve this.
There will be no change to lateral tracks and vertical profile of aircraft flying the DVR 1M 1V SIDs as a result of the truncations. This proposal does not have any dependencies with the plan for delivering the Airspace Modernisation Strategy which is covered under Gatwick's separate FASI-S ACP 2018-60.
Additional factors for consideration:
Safety: Radio fail procedures must be safe
Safety: Airspace containment must be assured. (The proposed truncation point is coincident with the 6000ft point on the DVR SID. The base of CAS in this area is 3500ft.)
RWY08 DVR SIDs: It is not intended that the RWY08 DVR SIDs shall be included in this ACP. However, as options are developed they may be required to be included to provide the optimal solution.

1.2 Date of Assessment Meeting/Teleconference/E mail Confirmation that proposal may be submitted

Teams Meeting: 07/08/20 13:30

Email: Meeting minutes, presentation, technical presentation, and flight track analysis sent on 01/10/20. Further flight track analysis sent on the 07/10/20 and confirmation of refined location of MIMFO (SID Truncation Point) sent on 08/10/20.

UK CAA agree that this proposal falls under the airspace change process, with a draft level of 2C (removal of established airspace structure (such as a Standard Instrument Departure truncation). Ref CAP1616 page 27 table 2.

1.3 Design Principles

The SID Truncation Design Principles are listed below.
The Design Principles have been developed and agreed between Gatwick Airport, ANSL and NATS.

Design Principle	Description
DP1 **Must be Safe**	Safety is always the number one priority. DVR Departures must be as safe or safer than today.
DP2 **No change to flight paths**	Conventional DVR SIDs should continue to operate as they are in current operations; there should be no change to the vertical or lateral tracks, or in the degree of dispersal, however if the proposed change results in flight paths being higher this is deemed acceptable.
DP3 **No detrimental noise or visual impact**	SID truncations must not result in a detrimental impact in noise or visual impact to communities around Gatwick Airport.
DP4 **Reduction of CO2 emissions**	Options should ensure that the flight plan route enables less fuel uplift (due to improved flight-plan profile) which should result in a net reduction in average per-flight CO_2 emissions.
DP5 **No impact to CAS**	SID truncations should require no change to controlled airspace boundaries.
DP6 **Appropriate RTF procedures**	SID truncations should ensure that the radio telephony failure (RTF) procedures are appropriate.
DP7 **Minimise ATS Route complexity**	SID truncation options should avoid creation of additional link routes which are very close to existing routes.

2. Stage 2

2.1 Options Appraisal. The option proposed and options discounted (where applicable) are detailed below.

Options proposed and why:

Option 0 - 'Do nothing'. Today's conventional SID AIP definitions would be retained and would be unchanged.

Option 1- 'Truncated as per policy'. The conventional SID AIP definitions would be truncated as per the CAA's SID Truncation Policy. There would be no change to the flight tracks over the ground of aircraft following the DVR 1M/1V SIDs. Note this truncation requires use of an existing ATS route (Y312) but requires the very minor realignment of the route by 0.110˚ to ensure it accurately reflects the existing promulgated SID route from DET D33 to DVR and therefore not change the tracks of aircraft operating the CONV DVR 1M 1V SIDs. No other aircraft other than Gatwick departures towards DVR use airway Y312.

Design Principle Evaluation:

Design Principle	Option 0 (Do nothing)	Option 1 (Truncate as per policy)
DP1 Must be Safe	No change.	Option 1 would not result in any change to flight paths and therefore there will be no change to safety. The existing DVR1M 1V SIDs terminate at DVR at 6000ft which is outside CAS. Truncating these SIDs will ensure the SID is wholly contained within CAS.
DP2 No change to flight paths	No change.	Option 1 utilises an existing ATS route (Y312) however the truncation requires the realignment of the route by 0.11^0. Although realignment is required, it will reflect the existing promulgated SID route from DET D33 to DVR and therefore not change the tracks of aircraft operating the CONV DVR SID.
DP3 No detrimental noise or visual impact	No change.	Option 1 utilises an existing ATS route (Y312) however the truncation requires the realignment of the route by 0.11^0. Although realignment is required, it will reflect the existing promulgated SID route from DET D33 to DVR and therefore not change the tracks of aircraft operating the CONV DVR SID.
DP4 Reduction of CO_2 emissions	No change which results in continued unnecessary fuel uplift and CO_2 emissions as some operators flight plan for the full SID.	Option 1 enables reduced fuel uplift for operators which would provide an overall reduction in CO2 emissions. Currently, only c.1% of departures to DVR file the Conventional SIDs and therefore truncation would have minimal benefit. However, the requirements of CAP1912 will result in 100% of departures to DVR using these truncated SIDs. Therefore, the benefit is much greater. Without these SID truncations, CAP1912 may result in an increase in CO_2 emissions owing to some operators requiring a greater fuel uplift required by the extant DVR 1M/1V SIDs.
DP5 No impact to CAS	No change.	Option 1 utilises an existing ATS route (Y312) however the truncation requires the realignment of the route by 0.11^0. Although realignment is required, it will reflect the existing promulgated SID route from DET D33 to DVR and therefore not change the tracks of aircraft operating the

		CONV DVR SID. The existing DVR1M 1V SIDs terminate at DVR at 6000ft which is outside CAS. Truncating these SIDs will ensure the SID is wholly contained within CAS.
DP6 Appropriate RTF procedures	No change.	The extant RCF procedures for the ADMAG 2X SID shall be applied to the MIMFO 1M/1V SIDs.
DP7 Minimise ATS Route complexity	No change.	Option 1 utilises an existing ATS route (Y312) however the truncation requires the realignment of the route by 0.11^0. Although realignment is required, it will reflect the existing promulgated SID route from DET D33 to DVR and therefore not change the tracks of aircraft operating the CONV DVR SID. Y312 is used by Runway 26 Gatwick departures only. Without realignment, there is no route connectivity from the end of the SID once truncated.

Option 0 was discounted as it does not meet DP4.
Option 1 best meets all the Design Principles and the requirements of the SID Truncation Policy, subject to minor realignment of Y312.

3. Stage 3

3.1 Consultation and Sponsor Confirmation Statement

This proposal has been submitted following consultation with the NATS (En-route ANSP) and ANSL (Aerodrome ANSP). We, GAL, as sponsor we confirm that that there is no change to track over the ground, no change to vertical profiles, no change to NPRs and no effect on adjacent SIDs.		
NATS (NERL) Email sign off received on 23rd November 2020. Name [redacted]	ANSL Email sign off received on 24th November 2020. Name [redacted]	GAL Email sign off received on 24th November 2020. Name [redacted]

4. Stage 4

4.1 SID Truncation Change Submission Details

Requirements	Details To Be Submitted by Sponsor
New SID Designator (To be Co-ordinated with SARG)	MIMFO 1M 1V
New 5LNC(s) (if applicable)	MIMFO
Truncation Position	Truncated at DET D33 6A point on EGKK RWY 08R/L 26L/R DVR 1M 1V 2P 2W SID AIP Chart (AIRAC 07/2020). Distance: 33nm
Co-ordinates of Truncation Position (include validation request – see Annex A paragraph 10)	511358.23N 0002930.43E (Seconds to 2 DP.) 511358N 0002930E (To the nearest second)
Revised Track / Distance to Truncation Position	There is no change in the track of the SID to truncation point. See proposed SID chart amendment Appendix B AD 2.EGKK-6-18 (marked up) V1.0.pdf
Navaid coverage (to ensure position is definable)	There are several existing ATS routes in this area, with proven NAVAID coverage. ADMAG is c130 metres NNE of MIMFO on the RNAV1 RWY 26 ADMAG 2X SID and at 6000ft within the LTMA, there is excellent DME/DME coverage. Y312 is an existing RNAV5 airway which also proves acceptable DME/DME coverage.

Safety Assessment Details	
Confirmation interacting ATS Routes/SIDs not affected.	ATS route Y312 is required to be realigned by 0.1129° to the south. Confirmation has been received from NATS that Y312 is only used for Gatwick departures and therefore this change does not impact the network. No other ATS routes or SIDs are affected.
RCF Implications: **(1) Describe impacts of proposed change on extant RCF procedures (confirmation that they have been examined and remain fit for purpose, or** **(2) If revised RCF procedures are required, state why, and provide the proposed details with the draft AIP amendment.**	The extant ADMAG SID and DVR SIDs do not have any specific RCF requirements. The generic RCF procedures detailed in EGKK AD 2.22.2b shall apply to the truncated SID. N/A
Airspace Containment confirmation.	The lateral profile of the proposed truncated SID to 6000ft has not been changed from the extant DVR SID, therefore the airspace containment is as per the extant DVR 1M 1V SID.
Adaptation and AIRAC implementation confirmation – provide confirmation that changes have been coordinated with the aerodrome for the date proposed.	The required AIRAC date is 25/02/2021 (02/2021) in order to meet the requirements of CAP1912. AIS Submission Deadline: 27/11/2020
AIP Amendments	
Confirmation there is no impact to NPRs.	No impact to NPR, SID truncation point is after and above the limits of the Gatwick Route 4 NPR. MIMFO (6A) is after ACORN (5A). (See Appendix B AD 2.EGKK-6-18 (marked up) V1.3)
Name change to NPR tables in Aerodrome AD 2.21	N/A
SID Chart Amendments: See Appendix B AD 2.EGKK-6-18 (marked up) V1.3	
Revisions to chart	See Appendix B AD 2.EGKK-6-18 (marked up) V1.3
Any other amendments to SID Chart (include PDF copy of chart showing changes required)	See Appendix B AD 2.EGKK-6-18 (marked up) V1.3

4.2. ATS Route Details

Submit details for New ATS Route in AIP Format.
The truncated portion of the EGKK DVR 1M 1V SIDs will be replaced by the realigned Y312. The tracks flown will be co-incident with that of the disestablished SID. For draft chart amendments and AIP changes see Appendix B and C.

Note only the EGKK DVR 1M 1V (RWY 26) SIDs are to be truncated, the runway 08 SIDs are not being truncated at this time.

5. Options Appraisal

Options:
This SID Truncation is justified on the basis of fuel saving. The EGKK DVR 1M 1V SIDs will be truncated by c.33NM. The conventional DVR SIDs do not currently have high usage and therefore these SID truncations would usually have minimal benefit which is why they have not been truncated before. However, once the ADMAG RNAV 1 SIDs are de-notified, as required by CAP1912, the benefits described below will be realised and the fuel uplift benefits brought about by the introduction of the ADMAG SID will be preserved. Conversely, without these SID truncations, CAP1912 may result in an *increase* in CO_2 emissions owing to some operators requiring a greater fuel uplift required by the extant DVR 1M/1V SIDs.

The current EGKK DVR 1M 1V SIDs have long sections where the flight profile is limited to 6000ft however typically aircraft climb above 6000ft earlier subject to the traffic scenario at the time. Some aircraft operators flight plan for the SID to be flown at 6000ft and calculate the fuel required accordingly.

SID truncation reduces the 6000ft level part of the flight and reflects what is typically operated today. It results in fuel calculations that are representative of the flight profile and therefore offers an opportunity for fuel savings for those operators who currently flight plan for the full SID. Hence after the SID has been truncated the aircraft will be able to fly carrying less 'excess' fuel. The reduction of an aircraft's weight also results in less fuel required to get to a destination; to carry more weight (fuel) the aircraft will burn more fuel.

The main advantage of SID Truncations is the removal of excessively conservative assumptions from operator's fuel planning systems following the denotification of the ADMAG SID. There are some factors which cannot be determined because each aircraft's operator and planning system acts differently, and each type/route may also be considered differently. This means that the fuel weight reduction of any truncation could be zero or it could be significant.

Zero weight benefit:	All operators operating on the truncated SID already uplift the minimum fuel, based on historic data of operating on the SID, how it is flown, and based on their flight planning system.
Significant weight benefit:	All operators operating on the truncated SID use the most conservative fuel plan based on the rigorous worst case assumption that the SID is flown to its lowest possible altitude and to its full length.

There will be no changes to lateral or vertical profiles of flights as a result of the truncation and the overall effect will be positive; no flight or stakeholder will be penalised as a result of the change.

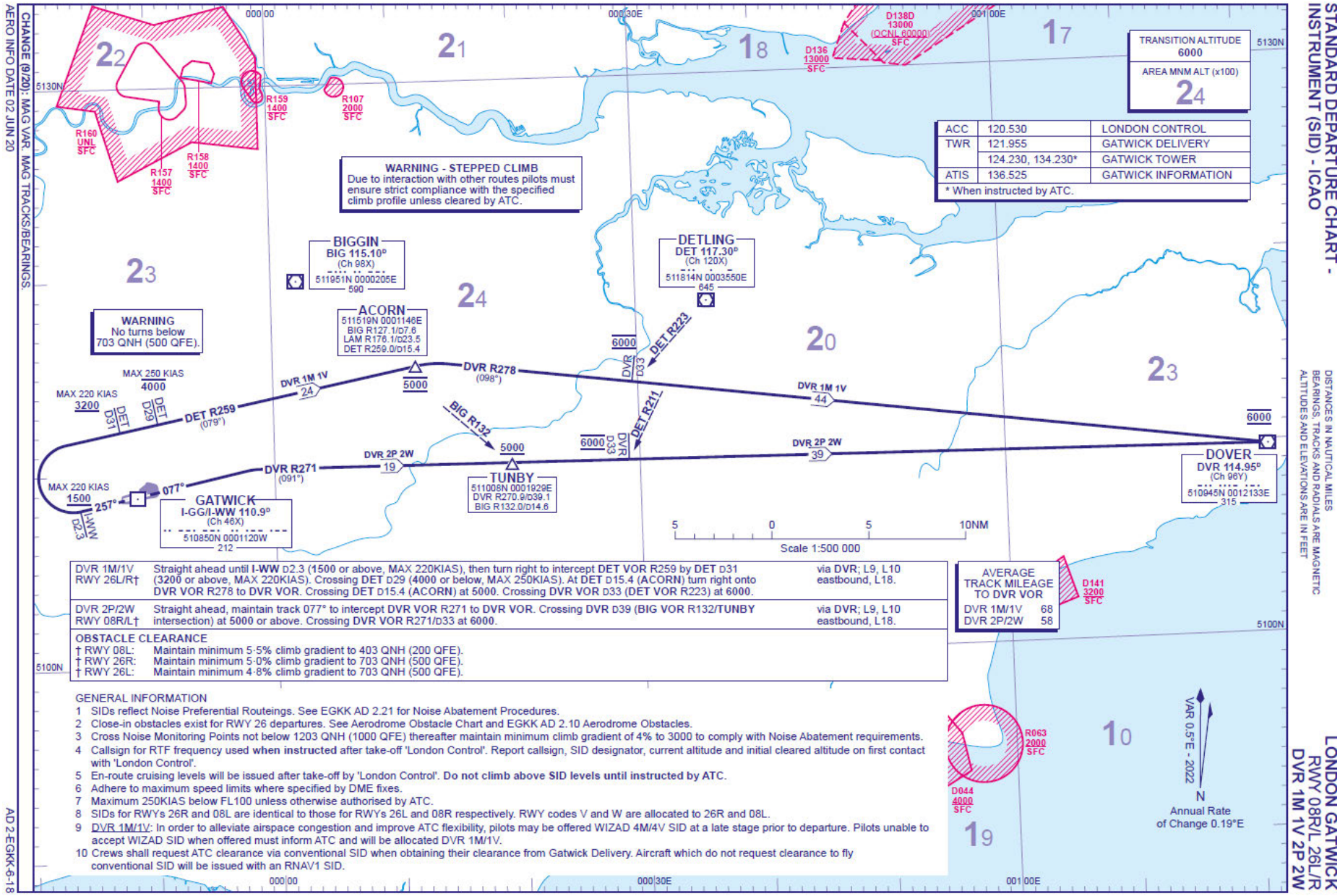
Option Appraisal (Option 1)

Group	Impact	Level of Analysis	Evidence
Communities	Noise impact on health and quality of life	Not applicable	The SID truncation will not change aircraft lateral or vertical tracks and therefore there will be no change to noise as a result of the truncation.
Communities	Air quality	Not applicable	The truncation changes are above 1000ft and will not change aircraft tracks or climb profiles. As such, there will be no change to air quality as a result of the truncation.
Wider society	Greenhouse gas impact.	Monetise and quantify	The SID truncation will not change aircraft tracks or climb profiles however for some flight planning systems, it does reduce the fuel required to be uplifted for the flight. Depending on the system used, in some cases this change can result in a small reduction in fuel uplift and in other cases it will result in zero benefit. The quantified monetary benefit due to reduce CO_2 emissions will fall between£0 and £219 (npv) per flight (see fuel burn section for calculations).
Wider society	Capacity/ resilience	Qualitative	There is no change as result of SID Truncation.
General Aviation	Access	Not applicable	There is no change as result of SID Truncation.
General Aviation/ commercial airlines	Economic impact from increased effective capacity	Not applicable	There is no change as result of SID Truncation.
General Aviation/ commercial airlines	Fuel burn	Monetise and quantify	In general, SID truncations remove excessively conservative assumptions from the fuel planning system. This may provide a fuel uplift planning benefit. Reducing an aircraft's weight means less fuel is needed to get to the destination. To carry more fuel (weight) the aircraft must burn more fuel. Typically an aircraft burns c.4.5% of its fuel per hour to carry the weight of that same fuel. There are dependencies which we cannot accurately determine because each aircraft's operator and planning system acts differently and each type/route may also be considered differently. The uplift benefit (weight reduction) of any individual truncation may be zero, or it may be significant. **Zero weight benefit** Operator's flight planning system calculates fuel uplift based on previous experience of how the SID is flown in practice, and based on historic data. For these operators SID truncation will give no benefit in reduced fuel uplift. **Significant weight benefit** Operator's flight planning system calculates fuel uplift based the most conservative fuel plan, based on the rigorous worst-case assumption that the SID is flown to its lowest possible

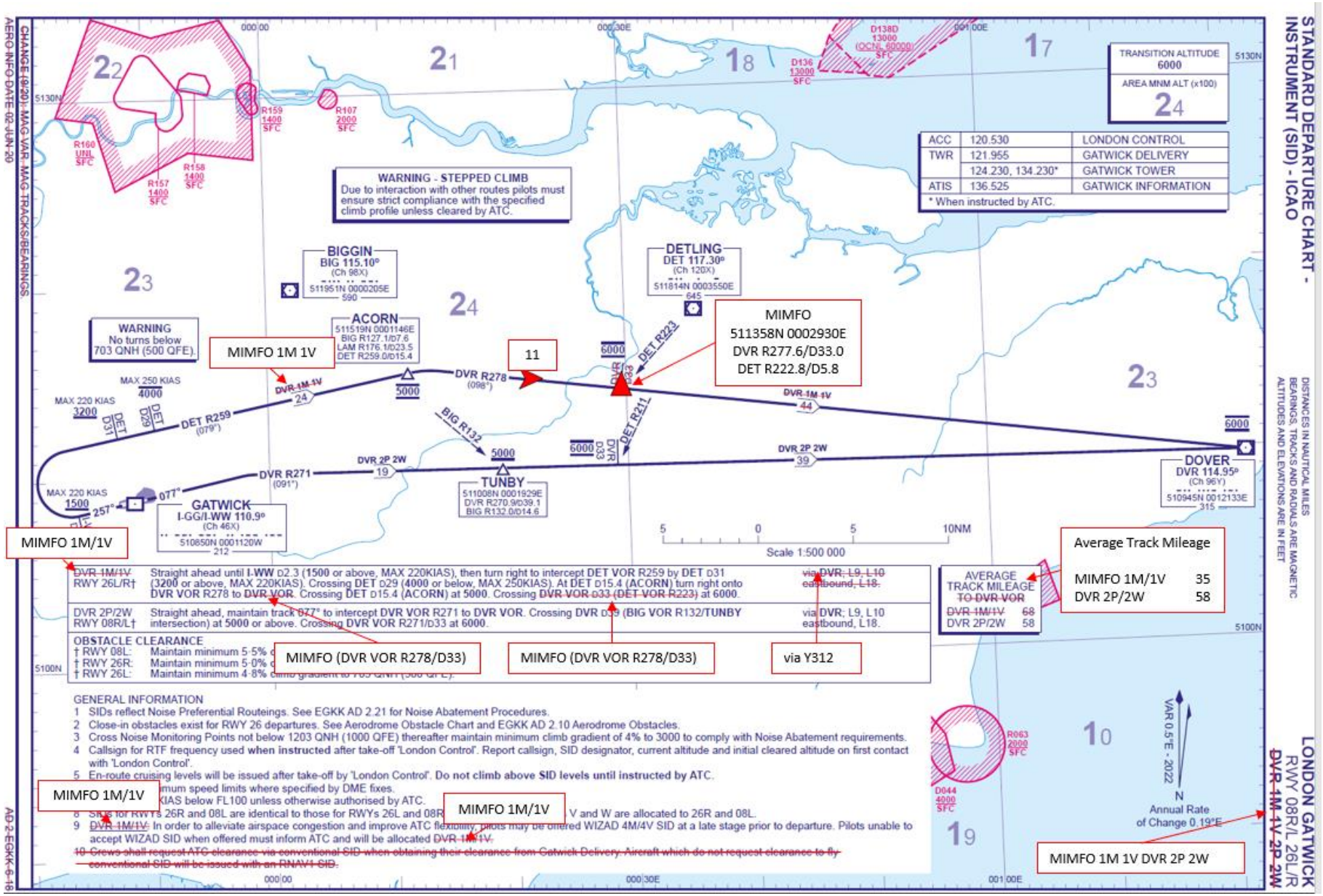
			design-altitude and to its full design-length before climb is issued to a more economical level. An example of a "significant weight benefit" would be for a Boeing 747 flying a Gatwick-CLN SID on a 13-hour long-haul flight. Should such a flight follow a conservative fuel plan assumption as described above, a SID truncation of c.33.nm (the distance between DVR and truncation waypoint MIMFO) could reduce the fuel uplifted to the aircraft by 1484kg, meaning the entire aircraft is 1.48 tonnes lighter. Over the course of a 13-hour flight, this lighter aircraft means 868kg less fuel would be burnt (and saving c. 2.62 tonnes of CO_2 from being emitted as a consequence). The monetized projected annual fuel burn saving are in a range between zero and £219 (npv) per flight. This was based on the IATA jet fuel price (September 2020). It is acknowledged that truncation of the DVR Conventional SIDs on their own will not produce a significant benefit as there are very few aircraft which fly on the route, as the majority of the traffic uses the RNAV1 ADMAG SID. However, once the ADMAG SID has been de-notified the benefit gained by the introduction of ADMAG will be preserved. Importantly, without these SID truncations, CAP1912 may result in an *increase* in annual fuel burn in a range between between zero and £219 (npv) per flight.
Commercial airlines	Training cost	Not applicable	Not applicable.
Commercial airlines	Other costs	Not applicable	There is no change as a result of SID Truncations and therefore there are no other known costs that would be incurred by commercial aviation.
Airport/ Air navigation service provider	Infrastructure costs	Monetise and quantify	None
Airport/ Air navigation service provider	Operational costs	Not applicable	There is no change as a result of SID Truncations and therefore there is no change in operational costs.
Airport/ Air navigation service provider	Deployment costs	Monetise and quantify	Training costs: Normal delivery of change under the AIRAC process – Business as Usual

When complete, please return with safety assessment and supporting maps attached to airspace@caa.co.uk.

Appendix A Original Chart



Appendix B AIP Chart Amendments AD 2.EGKK-6-18 (marked up) V1.3.pdf



Appendix C AIP Amendments

These AIP amendments should be read in conjunction with the CAP1912 AIP change request ACR.

ENR 3.3
See associated AeroData spreadsheet, ACP-2020-051 AeroData V1.0.xlsm for details.

ENR 4.4 Addition

Name Code	Coordinates	ATS route or other route	Terminal area
1	**2**	**3**	**4**
MIMFO	511358N 0002930E	Y312	EGKK SIDs

ENR 4.4 Removal

Delete ADMAG.

ENR 6-68 LOWER ATS ROUTES (SOUTH SHEET)

ADMAG to be removed and MIMFO added.

ENR 6-70 UPPER ATS ROUTES (SOUTH SHEET)

ADMAG to be removed and MIMFO added.

EGKK AD 2.20 LOCAL AERODROME REGULATIONS
11. PROCEDURES FOR OUTBOUND AIRCRAFT

Section 11 procedures for outbound aircraft will be updated:

In order to improve ATC flexibility and alleviate airspace congestion in the London TMA, alternative SID procedures are available for tactical allocation by ATC to aircraft normally routeing via MIMFO, FRANE and LAM SIDs from Runway 26. The alternative SIDs are designated WIZAD (for MIMFO), TIGER (for LAM) and DAGGA (for FRANE) and may be offered to aircraft at a late stage during taxiing dependent upon the overall traffic situation within the TMA. Pilots should be prepared to accept the alternative SID when offered, but if unable to do so must advise ATC in which case the normal SID clearance will be issued.

EGKK AD 2.24 CHARTS RELATED TO AN AERODROME

AD 2.EGKK-6-18: INSTRUMENT (SID) RWY 08R/L 26L/R DVR 1M 1V 2P 2W will be replaced with INSTRUMENT (SID) RWY 08R/L 26L/R MIMFO 1M 1V DVR 2P 2W.

Standard Routing Document
The Standard Routing Document requires updating to reflect the truncation changes. This is managed by NATS who liaise with Eurocontrol (Haren).

SARG Airspace Regulatory Approval use only.

Serial	Design Check	Design Approved / Not Approved	Verified By
1a	**SID revised track and distance.**	Approved	[redacted]
1b	**Co-ordinates verified.**	Approved	[redacted]
1c	If errors evident, SID revised track and distance entered below.		
2a	**ATS Route track and distance.**	N/A	
2b	**ATS Route terrain clearance assured.**	N/A	
2c	If errors evident, ATS Route revised track and distance entered below.		
3	**Navaid infrastructure** (adequate coverage for new termination point).	Approved	[redacted]
4	**RCF procedures.**	Approved	[redacted]
5	**Interacting procedures.**	N/A	
6	**Airspace Containment.**	N/A	
7	**SID chart – proposed changes.**	Approved	[redacted]
8	**SID chart proof from AIS.**	TBC	[redacted]
9	**Final Options Appraisal.**	Approved	[redacted]
10	**Safety Assessment.**	Approved	[redacted]
11	**NPR Tables – proposed changes (if applicable).**	N/A	
12	**SID truncation proposal confirmed as a Level 2C change.**	Approved	[redacted]
13	**DfT advised if changes made to SIDs at designated airports. (following approval)**	Approved	[redacted]

Change recommended by:

Name..... [redacted] .....

Date.....25 Nov 2020.....

Change approved by:

Name..... [redacted] ..... **Appointment**.....Manager Airspace Regulation.....

Date.....26 Nov 2020.....