

The original CLN 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-2020-052) – SUBMISSION DATE:

23/11/20

Existing SID: EGKK CLN 1M 1V 5P 5W

Proposed SID: EGKK FRANE 1M 1V 1P 1W

SID Truncation Sponsor Details:

	En-Route ANSP	Airport ANSP	Airport Authority
Unit	NATS Swanwick	ANSL (Gatwick)	Airport Limited (GAL)
Name	[REDACTED] Swanwick Development (Airspace)	[REDACTED] General Manager ANS	[REDACTED] 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 the Gatwick Airport CLN 1M 1V 5P 5W SIDs in accordance with the extant SID truncation process policy.

The current conventional CLN SIDs from Runway 26 have long sections where the flight profile is limited to 6000ft however typically aircraft dimb 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 CLN SIDs, CLN 1M 1V 5P 5W, from runways 08 & 26 left & right, are truncated at FRANE (DET R0 13/D5) and new conventional FRANE SIDs are created. This truncation position would be the same as the end point of the RNAV 1 FRANE 1X & 1Z SIDs. The truncated section of the SID will be replaced with the existing Area Navigation Route M604.

There will be negligible change to lateral tracks and vertical profile as a result of the truncations. This proposal does not have any dependencies on the plan for delivering the Airspace Modernisation Strategy which is covered under Gatwick’s separate FASI-S ACP 20 18-60.

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 CLN SID. The base of CAS in this area is 3500ft.)

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

Teams Meeting: 07/08/20 13:30

Email submission of documents: Meeting minutes, Stage 1a presentation and Technical presentation 01/10/20.

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.

Design Principles:

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. CLN departures must be as safe or safer than today.
DP2 No change to flight paths	Conventional CLN SIDs should continue to operate as they do 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 enable a net reduction in average per-flight CO2 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:

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, controlled airspace boundaries or SID profiles.

Options discounted and why:

None.

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.
DP2 No change to flight paths	No change.	Option 1 would not result in any change to conventional CLN flight paths.
DP3 No detrimental noise or visual impact	No change.	As there is no change to flight paths or profiles, there will be no detrimental impact to noise or visual impact.
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 CO ₂ emissions. Currently, very few departures to CLN file the Conventional SIDs and therefore truncation would have minimal benefit. However, the requirements of CAP1912 will result in 100% of departures to CLN 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 CLN 1M 1V 5P 5W SIDs.
DP5 No impact to CAS	No change.	As there is no change to flight paths or

		profiles, Option 1 does not impact CAS.
DP6 Appropriate RTF procedures	No change.	Appropriate RTF procedures can be developed.
DP7 Minimise ATS Route complexity	No change.	Option 1 utilises an existing ATS route for the truncated part of the SID and would not result in any new routes.
<p>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.</p>		

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 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 23 rd November 2020. Name [Redacted]	ANSL Email sign-off received on 24 th November 2020. Name [Redacted]	GAL Email sign-off received on 24 th of November 2020. Name [Redacted]
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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)	FRANE 1M 1V 1P 1W
New 5LNC(s) (if applicable)	N/A
Truncation Position	DVOR DET R013/D5, 6000ft point on the DET to DAGGA leg of the SID
Co-ordinates of Truncation Position (include validation request – see Annex A paragraph 10)	512306.00N 0003739.40E (Seconds to 2 DP) 512306N 003739E (to the nearest second)
Revised Track / Distance to Truncation Position	See proposed SID chart amendment Appendix B AD 2.EGKK-6-7 (marked up) v1.2.
Navaid coverage (to ensure position is definable)	FRANE is an existing waypoint. There are several existing ATS routes in this area, with proven NAVAID coverage. Truncation fix is 5NM from DET DVOR.

Safety Assessment Details	
Confirmation interacting ATS Routes/SIDs not affected.	The truncation point lies on the extant CLN 1M 1V 5W 5P SID and will join the extant airway M604 at a point declared on the Airway (FRANE) Therefore, there are no impacts on adjoining ATS routes and SIDs by this SID Truncation ACP.
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 specific RCF procedures are the ones developed for the FRANE 1X/1Z RNAV1 SIDs See AD EGKK 2.22.3a. This ACP shall preserve their intent by revising the instruction in AD EGKK 2.22.3a, via AIP amendment, to the following: <i>Outbound traffic operating on FRANE 1M/1V/1P/1W/1Z: If a clearance to climb or re-routing instructions have not been given, comply with the route and altitude limitations detailed in the allocated Standard Instrument Departure Procedures listed at AD 2-EGKK-6-7, at FRANE route via M604 to DAGGA and maintain 6000 FT until DAGGA; at DAGGA, commence climb to flight planned level.</i> <i>b. All outbound traffic except those operating on FRANE 1M/1V/1P/1W/1Z: Comply with the route and altitude limitations detailed in the allocated Standard Instrument Departure Procedures (listed at AD 2-EGKK-6-1 to AD 2-EGKK-6-32) or ATC clearance and commence climb to flight planned level after the last position at which an altitude is specified.</i>
Airspace Containment confirmation.	The lateral profile of the proposed truncated SID to 6000ft has not been changed from the extant CLN SID, therefore the airspace containment is as per the extant CLN 1M 1V 5W 5P SID.
Adaptation and AIRAC implementation confirmation – provide confirmation that changes have been co-ordinated with the aerodrome for the date proposed.	The required AIRAC date is 25/02/2021 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. FRANE (6A) is after ACORN (5A). (See AD 2.EGKK-6-7 (marked up) V1.2.)
Name change to NPR tables in Aerodrome AD 2.21	N/A
SID Chart Amendments: See Appendix B AD 2.EGKK-6-7 (marked up) V1.2.	

Revisions to chart	See Appendix B AD 2.EGKK-6-7 (marked up) V1.2.
Any other amendments to SID Chart (include PDF copy of chart showing changes required)	See Appendix B AD 2.EGKK-6-7 (marked up) V1.2.

4.2. ATS Route Details

Submit details for New ATS Route in AIP Format.

The truncated portion of the EGKK CLN 1M 1V 5W 5P SIDs will be replaced by the existing ATS route M604 to DAGGA and then L620 to CLN. The tracks flown will be co-incident with that of the disestablished portion of the SID.

Draft AIP amendments are provided in Appendix C.

See Appendix B AD 2.EGKK-6-7 (marked up) V1.2 for chart amendments.

5. Options Appraisal

Options:

This SID Truncation is justified on the basis of fuel saving as well as ATM simplification following the withdrawal of the RNAV FRANE 1X SID. The EGKK CLN 1M 1V 5W 5P SIDs will be truncated by c.40NM.

The conventional CLN 1M 1V 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 FRANE 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 FRANE SID will be preserved. Conversely, without these SID truncations, CAP1912 may result in an *increase* in CO₂ emissions owing to some operators requiring a greater fuel uplift required by the extant CLN 1M/1V SIDs.

The current conventional EGKK CLN 1M 1V 5W 5P 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. 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	<p>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 reduction in fuel uplift and in other cases it will result in zero benefit.</p> <p>The quantified monetary benefit due to reduce CO₂ emissions will fall between 0 and £265 (npv) per flight. See fuel burn appraisal for calculations.</p>
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	<p>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.</p> <p>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.</p> <p>Zero weight benefit</p> <p>Operators whose flight planning system calculates fuel uplift</p>

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

Operators whose 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.40nm (the distance between CLN and truncation waypoint FRANE) could reduce the fuel uplifted to the aircraft by 1,799kg, meaning the entire aircraft is 1.79 tonnes lighter.

Over the course of a 13-hour flight, this lighter aircraft means 1,052kg less fuel would be burnt (and saving c.3.17 tonnes of CO₂ from being emitted as a consequence).

The monetized projected annual fuel burn saving are in a range between zero and £265 (npv) per flight.

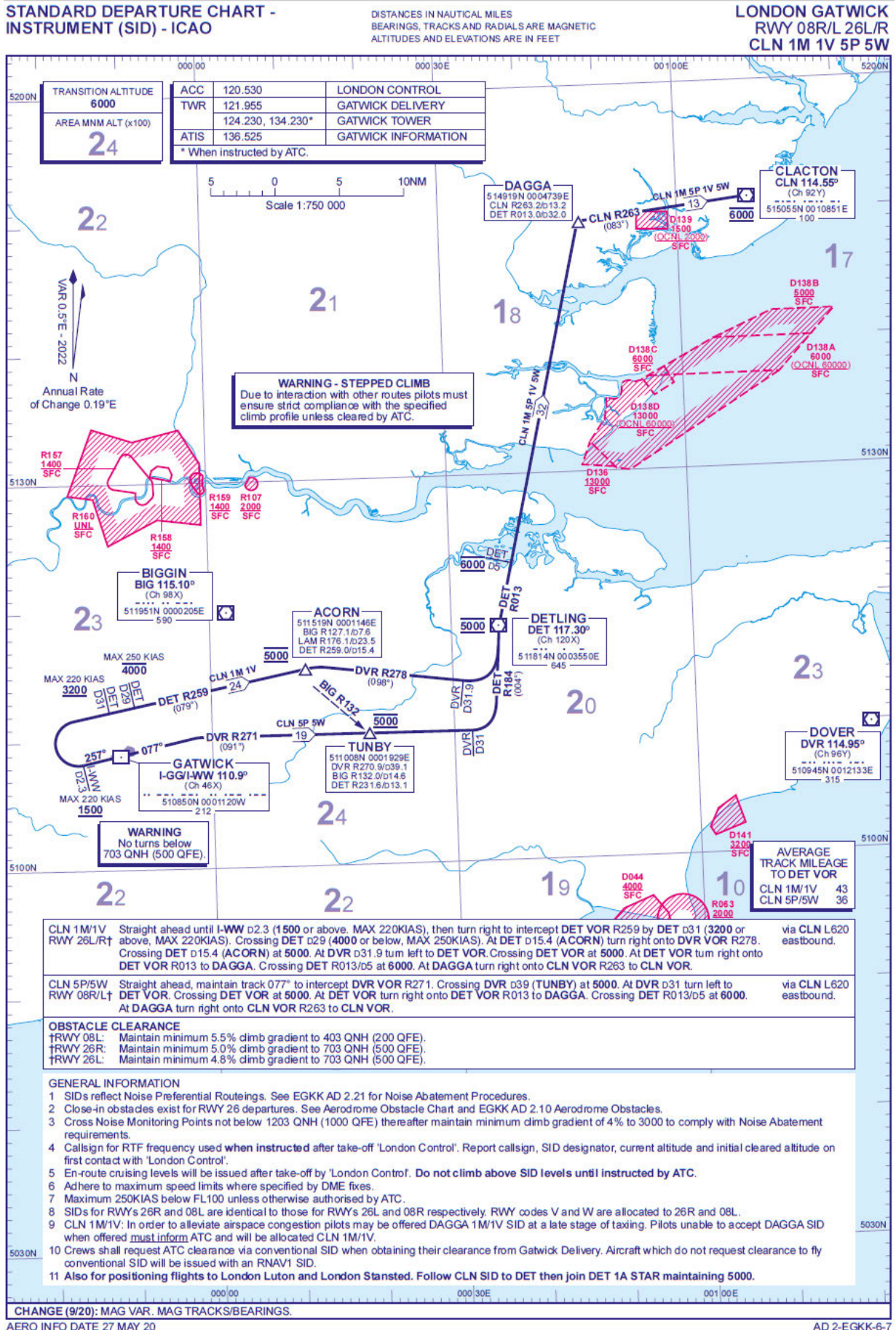
This was based on the IATA jet fuel price (September 2020). It is acknowledged that truncation of the CLN Conventional SIDs on their own will not produce a significant benefit as there are very few aircraft which currently fly on the route, as the majority of the traffic uses the RNAV1 FRANE SID. However, once the RNAV1 FRANE SID from Runway 26 has been de-notified the benefit gained by the introduction of FRANE 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 £265 (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

AD 2.EGKK-6-7 (Original).



Appendix C: AIP Amendments

EGKK AD 2.20 LOCAL AERODROME REGULATIONS

3 RADIO COMMUNICATION FAILURE PROCEDURES OUTBOUND AIRCRAFT

Section 3, Radio fail procedures, will be updated:

3 a. Outbound traffic operating on FRANE 1M/1V/1P/1W/1Z: If a clearance to climb or re-routing instructions have not been given, comply with the route and altitude limitations detailed in the allocated Standard Instrument Departure Procedures listed at AD 2-EGKK-6-7, at FRANE route via M604 to DAGGA and maintain 6000 FT until DAGGA; at DAGGA, commence climb to flight planned level.

b. All outbound traffic except those operating on FRANE 1M/1V/1P/1W/1Z: Comply with the route and altitude limitations detailed in the allocated Standard Instrument Departure Procedures (listed at AD 2-EGKK-6-1 to AD 2-EGKK-6-32) or ATC clearance and commence climb to flight planned level after the last position at which an altitude is specified.

EGKK AD 2.24 CHARTS RELATED TO AN AERODROME

AD 2.EGKK-6-7: INSTRUMENT (SID) RWY 08R/L 26L/R CLN 1M 1V 5P 5W will be replaced with: INSTRUMENT (SID) RWY 08R/L 26L/R FRANE 1M 1V 1P 1W

Standard Routing Document

The Standard Routing Document requires updating to reflect the truncation changes.

SARG Airspace Regulatory Approval use only.

Serial	Design Check	Design Approved / Not Approved	Verified By
1a	SID revised track and distance.	Approved	██████████
1b	Co-ordinates verified.	Approved	██████████
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	██████████
4	RCF procedures.	Approved	██████████
5	Interacting procedures.	N/A	
6	Airspace Containment.	N/A	
7	SID chart – proposed changes.	Approved	██████████
8	SID chart proof from AIS.	TBC	██████████
9	Final Options Appraisal.	Approved	██████████
10	Safety Assessment.	Approved	██████████
11	NPR Tables – proposed changes (if applicable).	N/A	
12	SID truncation proposal confirmed as a Level 2C change.	Approved	██████████
13	DfT advised if changes made to SIDs at designated airports. (following approval)	Approved	██████████

Change recommended by:

Name..... [REDACTED]

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

Comment:

The CLN SID was truncated to the position of the current RNAV 1 FRANE WP which is on the DET R013.19 true as opposed to the current CLN SID where the DET VOR R013.25 true is used. But with the DET VOR station declination applied the DET VOR magnetic radial is R013 (same as the current published CLN SIDs). The reason for maintaining the FRANE WP coordinates as they are today in the RNAV 1 FRANE SID is to ensure the truncated conventional SID will terminate at FRANE on the ATS route and here can only be one set of coordinates for a 5LNC regardless of whether it is applied in a conventional or an RNAV IFP. The difference between the position of FRANE Fix and DET VOR R013/D5 on the current conventional CLN SID is 11.08m.

The resultant magnetic radial published of DET VOR R013 is the same for both the conventional CLN and FRANE SIDs, therefore the tracks over the ground will have no noticeable change.

Change approved by:

Name..... [REDACTED]

Appointment.....Manager Airspace Regulation.....

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