VER 4

AIRSPACE CHANGE PROPOSAL OPERATIONAL ASSESSMENT

Title of Airspace Change Proposal	**Gatwick RNAV SIDs**
Change Sponsor	**Gatwick Airport Limited**
DAP Project Leader	[redacted]
Case Study commencement date	**5 December 2012**
Case Study report as at	**14 February 2013**

Instructions

In providing a response for each question, please ensure that the 'Status' column is completed using the following options:

- **Yes**
- **No**
- **Partially**
- **N/A**

To aid the DAP Project Leader's efficient Project Management it may be useful that each question is also highlighted accordingly to illustrate what is resolved (Green), **not resolved** (Amber) or **not compliant** (Red) as part of the DAP Project Leader's efficient project management.

1.	Justification for change and "Option Analysis"	Status
1.1	**Is the explanation of the proposed change clear and understood?**	Yes
	The proposal is to convert existing Gatwick main runway Trial P-RNAV SIDs for Rwy 26L CLN2X & SAM1X, and Rwy 08R SFD2Z & SAM2Z (all in use since 2007/2008), into permanent RNAV1 SIDs, and to additionally establish new RNAV SIDs to replicate all other main runway conventional SIDs. The sponsor plans to retain the existing conventional SIDs until approximately 2018, thus providing a managed transition period until such time as all conventional SIDs can be withdrawn. A proposed post implementation management oversight process is also included with the ACP at paragraph 6.1. This process has stated that should any RNAV SID be deemed to be of such detrimental effect, it could be withdrawn – see Note 1: Case Officer Notes: 1. In this event, whilst potential for re-evaluation is possible, options for replication without detrimental environmental impacts may not be feasible unless NPR adjustments were considered (although the DAP SID design specialist is looking to see if there may be other RNAV design options not considered by Gatwick). 2. Whilst the Trial and ACP refers to P-RNAV as the terminology used at introduction of the Trial, all references hereafter refer to RNAV1.	
1.2	**Are the reasons for the change stated and acceptable?**	Yes

The Trial RNAV SIDs were first introduced in 2007 to enable NERL to gain experience of using RNAV1 procedures in the terminal airspace environment, and to assess track keeping accuracy and track dispersion of RNAV1 departures prior to the abandoned TC North airspace change proposal. In 2008, the 3 'turning departures' (Routes 2,3 &4) were modified to have an initial design speed of 220kts by request of trial participants to achieve better performance. After a number of Trial extension periods agreed by the CAA, following a review of an updated Trial report provided by NATS to the CAA at the end of summer 2010, and given that there had been a number of other RNAV Trials in the LTMA which had not been brought to a successful conclusion, Head of CAS (previous section title) insisted that either an ACP process was initiated to introduce permanent procedures, or the Trial should be withdrawn.

NERL subsequently advised the CAA that they no longer wished to continue with the Trial. As DAP had regular sight of monthly statistics, it was however noticeable that whilst NERL requested to end the RNAV SID Trial, there had been a significant surge in trial participants' use of procedures in the latter half of 2010 which continued into 2011. This was found to be attributable to a number of airline operators gaining RNAV1 certification for both crews and aircraft, noticeably [redacted] With this increase in use of the trial SIDs, in early 2011, Gatwick Airport Limited (GAL) therefore requested to take over ownership of the Trial from LTC in order to keep the trial procedures running to achieve improved track keeping performance, pending their sponsorship to permanently introduce a full suite of RNAV SID procedures for Rwy 08R and 26L. Permanent introduction of RNAV1 SIDs would enable both the airport and airlines to gain the benefit of better track keeping performance and NPR adherence, and additionally, for the airport to comply with the UK PBN policy for introducing RNAV1 SIDs.

1.3	**Have all appropriate alternative options been considered, including the 'do nothing' option?**	Yes

Design options were extremely limited given the nature of having to 'replicate' existing conventional SIDs and for the designs to enable compliance with the requirements of the airport NPRs. However, there are 2 areas of interest (CLN2X & SFD2Z) where options were considered and eventually discarded.

ROUTE 4 – RWY26 CLN2X

The airport did try to examine possibilities of applying different design criteria for the Rwy 26 departures with a right turn out via ACORN (Route 4 in the Consultation and ACP), because the existing NPR alignment does not reflect the actual flight paths flown by some aircraft which cannot complete the first turn after departure without routeing along the western extremity of the NPR or flying beyond the lateral limits of the NPR, a fact which is evident for both conventional and RNAV1 SIDs. A significant amount of traffic uses the initial part of the CLN2X (Route 4) as far as ACORN, flying on the 2 other dominant routeings to Dover and Lambourne, and the less frequently used SID to Biggin for flights into Heathrow and Northolt.

Whilst Phase One of the Trial commenced in September 2007 with an initial speed restriction of 210kts around the first turn, the trial results indicated some issues with operators exceeding the design speed limits on the 'wrap round' turn; it later emerged that the participants preferred a speed of 220kt as opposed to the initial design of 210kts (in draft CAA Policy at the time of design) as 210kts meant that some types would have to fly with a certain amount of flap deployed thus increasing fuel burn, CO2 emissions and noise. Hence Phase 2 of the Trial commenced from May 2008 with a 220kt revision for the first 2 turns after departure. The consultation document and ACP highlighted a review of possible options to attempt to use different criteria for this Rwy 26 profile in order to move the track of the SID back into the published NPR where the NPR deviations were occurring. The revised criteria did not work as it merely served to split the tracks of departing flights, compromising safety, while still resulting in jet traffic running on the edge or outside of the north western edge of the NPR. Gatwick advised that the resultant spread of traffic and sequencing a mixture of aircraft types would be untenable which we would agree with. This option was therefore dropped and the original, flight trialled, design of the CLN2X RNAV SID retained as part of this proposal.

UPDATE FOLLOWING ENTRY SUBJECT TO DEVELOPMENTS WITH DfT

As at 14 February, the issue of both the CLN2X and the conventional SID via Route 4 is un-resolved with the DfT regarding whether the proposed Route 4 can be progressed, and what action is required given the Trial SID and the existing conventional SID both result in flights leaving the NPR. [redacted] For completeness, responses from DfT are reproduced below:

On 26 November 2012, the DfT UK Aviation Policy Implementation Division has indicated that (FLAG I) :

[redacted]

On 27 November 2012, whilst acknowledging receipt of clarification from Head of CAS, highlighting why the Trial was being brought to a close, the DfT indicated that:

> *Thanks for your email. I note your points about why there is the need to progress the Gatwick ACP. I understand there are some good reasons for pursuing the ACP now* [redacted]
>
> *If, as seems likely, the Gatwick ACP will require moving one or more NPRs* [redacted]

The issue was further discussed with the DfT on 18 Dec 12, following which Head of CAS briefed ADAP 1. We agreed that should the CAA approve the operational design of the new RNAV CLN SID, then we would write to the DfT seeking their input regarding the implications on the published NPR.

Note: A letter has been drafted for ADAP 1 to send to [redacted] indicating our likely assessment of the changes proposed.

	ROUTE 2 – RWY 08 SFD2Z Following the ACP analysis, as a result of the Consultation feedback received associated with some strong feedback from residents in the East Grinstead area concerning the proposal for the Route 2 procedure (one of the Trial procedures), the DAP Case Officer requested Mgr ATC Gatwick to advise what level of detail of analysis had been conducted by Gatwick following the consultation to determine whether there were other options which could be considered to address residents concerns. The situation is clearly evident in the attached diagrams for route 2 which show the track dispersion for the existing conventional centreline, and a comparison of track dispersion actual data from the RNAV Trial SID. Whilst the RNAV Trial SID dispersion (and for that matter the nominal centreline) sits quite nicely within the NPR swathe, it can be seen that there is a major 'shift' from the core track on the west side of the NPR centreline which has moved to the east side of the NPR centreline and hence closer to East Grinstead. Interestingly, the conventional centreline shown at 250 kts, has a bulge which shows a track half way across the east side of the NPR centreline, and the RNAV CL shows a smaller deviation away from the centreline (according to the ACP paragraph 4.2, this distance is 370m at the maximum displacement as shown at Fig 23 Page 2). This difference is most certainly due to the fact that the RNAV design has a restriction of 220kts around the first turn. This is discussed in more detail in Section 5.2.	
1.4	**Is the justification for the selection of the proposed option sound and acceptable?**	Yes
	Whilst there were a number of references to the UK PBN policy, justification in the original ACP was missing; the DAP Case Officer requested immediate action to provide adequate justification as this was a fundamental issue. Gatwick was advised to update justification and an Issue 1.1 ACP with a new Section 2 for justification was provided. The CAA FAS was quoted recommending the transition to PBN technologies. The ACP explained why the airlines supported the RNAV SID proposal (responses from principal UK airline operators supporting the proposal was provided with consultation feedback). Reduction in controller workload was also cited as supporting rationale (which we would endorse), together with the improved track-keeping being a major feature of RNAV1 navigation accuracy with the overall objective of improving NPR track-keeping compliance. Justification also quoted that the Government guidance from DfT recommends concentration to reduce impact of overflying populations. As the FAS is a cornerstone for development of UK airspace and improved and more environmentally efficient departure and arrival routes, we wholeheartedly support the Gatwick RNAV SID proposals. Whilst the aim is to replicate the existing conventional SIDs as far as possible, there are benefits to be realised, although the impacts of concentration are recognised.	

2.	Airspace Description and Operational Arrangements	Status
2.1	**Is the type of proposed airspace clearly stated and understood?**	Yes
	New RNAV1 SIDs. There are no changes to lateral or vertical limits of controlled airspace.	
2.2	**Are the hours of operation of the airspace and any seasonal variations stated and acceptable?**	Yes
	H24.	
2.3	**Is any interaction with adjacent domestic and international airspace structures stated and acceptable including an explanation of how connectivity is to be achieved? Has the agreement of adjacent States been secured in respect of High Seas airspace changes?**	Yes
	All proposed SIDs replicate existing conventional SIDs and hence connectivity with en-route airspace is achieved.	
2.4	**Is the supporting statistical evidence relevant and acceptable?**	Yes
	Following a study in the summer of 2012, Table 3 of the ACP (page 15-16) airlines representing 92% of the aircraft movements at Gatwick confirmed that they were RNAV1 certified. Most of the remainder did not reply; Gatwick hence believe that the actual RNAV capability may therefore be higher (Note at top of ACP page 17 refers). Trial analysis reports for the RNAV SID Trial were included with the ACP at Appendix F which provide detailed analysis of track-keeping and design related aspects. The trial was successful and provided confidence to prove track keeping accuracy was adhering to the requirements of RNAV1 navigation specification. Traffic growth figures are shown at ACP Appendix H but are not relevant to the RNAV1 SID utilisation.	
2.5	**Is the analysis of the impact of the traffic mix on complexity and workload of operations complete and satisfactory?**	Yes

	Gatwick has stated that introduction of RNAV1 SIDs will have no influence on complexity or ATC workload. The DAP Case Officer would however, contend that aircraft following the published procedures will have a greater consistency of accuracy in adhering to lateral and vertical profiles compared to the use of 'informal' overlay procedures as all procedures should be coded up in the same manner compared with 'informal overlays'. Also, in theory, the introduction of RNAV1 procedures could provide a reduction in controller workload. However, it is also recognised that in a mixed PBN environment which has not been completely systemised, that controllers will apply radar vectoring once clear of NPR restrictions in order to achieve a safe and expeditious departure in order to optimise climb profiles in a very busy LTMA environment. Therefore, until complete systemisation is achieved, we believe reduction in controller workload is difficult to quantify, however, reduction in flight deck workload with application of PBN procedures is a benefit for flight crews.	
2.6	**Are any draft Letters of Agreement and/or Memoranda of Understanding included and, if so, do they contain the commitments to resolve ATS procedures (ATSD) and airspace management requirements?**	n/a
	Not applicable.	
2.7	**Should there be any other aviation activity (low flying, gliding, parachuting, microlight site etc) in the vicinity of the new airspace structure and no suitable operating agreements or ATC Procedures can be devised, what action has the sponsor carried out to resolve any conflicting interests?**	n/a
	Not applicable.	
2.8	**Is the evidence that the Airspace Design is compliant with ICAO SARPs, Airspace Design & FUA regulations, and Eurocontrol Guidance satisfactory?**	Ongoing
	The RNAV1 SIDs have been designed by licensed procedure designers from [redacted] using software which checks compliance with ICAO SARPs & PANS-OPS compliance. Following initial DAP analysis, a number of issues arose and have been raised with [redacted] SID design and use of CA – CF Path Terminators. The DAP Case Officer was alerted by the DAP IFP specialist (10 Jan 13) that different design criteria were being applied to new designs for the DVR1X, LAM1X and BIG1X procedures compared to criteria used for the CLN2X Trial SID. This issue was investigated. With regard to Route 4 (the CLN2X profile), in order to replicate the CLN2X Trial SID with the same profile on the new DVR1X, LAM1X and BIG1X RNAV SIDs (the profile as far as ACORN is common for all 4 SIDs), the DVR, LAM and BIG designs will revert to those designed for the CLN2X, thus ensuring that the impacts shown on the consultation document (from the results of the trial) will reflect the designs of the CLN2X. The issue was therefore resolved. **Note:** From GAL 14 Jan 13: In response to a request to advise usage of Route 4 conventional SIDs by heavy/large aircraft, GAL advised during the last three months: *'of all the aircraft popping out of the 26L right turn, B777 and B747 equate for less than 10% (Conv LAM & DVR SIDs) of the total'.*	

All designs using CA-CF Path Terminators have been revised and re-submitted.

OUTSTANDING ISSUES

Outstanding design issues are detailed below:

- A late obstacle issue arose (increased height of trees) which required [redacted] to re-examine obstacle clearance and climb gradients. Designs are being re-checked by [redacted] and revisions with updated gradients will be re-submitted to DAP if required.

- As highlighted in the covering brief, designs for Rwy 26 procedures: BOGNA/HARDY (Route 7), SFD (Route 8) and TIGER/DAGGA/WIZAD (Route 9), are to be re-examined for way point positioning, and re-submitted to DAP IFP for approval.

- Flyability checks are required on Rwy 26 BIG1X, SFD1X, TIGER1X SIDs; subject to DAP IFP analysis, a flyability check may also be required on the BOGNA/HARDY SID.

- As at 14 Feb 13, the sponsor plans to have all the design revisions submitted to DAP IFP for approval by 1 March, and is aiming to have all flyability checks also completed by this date. This is ambitious and subject to third party activity.

- DAP IFP have briefed the sponsor that design revisions may be submitted in batches to enable final DAP IFP approvals to be issued by 1 March (again this is ambitious; whether this proves viable remains to be seen).

- Recent liaison with AIS has determined that published AIS deadline for F933 submissions are not adequate to enable all charting to be completed in time. AIS has indicated 1 March is the deadline in order to achieve the Double AIRAC deadline for AIRAC 7/2013 (the delayed implementation of 27 June). (15 new charts plus minor revisions to the Trial charts will take AIS 3 weeks to complete).

The submission of this Operational Report and recommendations are therefore based on an assumption of satisfactory re-submission of RNAV SID designs and their approval from DAP IFP, and that all flyability checks as required above will be satisfactory. If further issues come to light in the meantime then these will be highlighted and action taken as appropriate.

Therefore, it is recommended that DAP management review this report on the assumption all SID designs will receive approval from the DAP IFP specialist. If not, the design issues will be highlighted to the sponsor's APD for resolution, and if not resolved in time, the SIDs would not be approved until a satisfactory compliance check can be achieved. If any designs fall into this category, then they could be implemented at the next appropriate AIRAC date.

Note: Mgr ATC Gatwick has advised that should designs not be approved in time to meet the AIRAC 7/2013 implementation on 27 Jun 13, then implementation could be delayed until after September due to implications with Gatwick Adaptation issues.

2.9	**Is the proposed airspace classification stated and justification for that classification acceptable?**	Yes
	No change to airspace classification.	
2.10	**Within the constraints of safety and efficiency, does the airspace classification permit access to as many classes of user as practicable?**	n/a
	Not applicable.	
2.11	**Is there assurance, as far as practicable, against unauthorised incursions? (This is usually done through the classification and promulgation)**	n/a
	Not applicable.	
2.12	**Is there a commitment to allow access to all airspace users seeking a transit through controlled airspace as per the classification, or in the event of such a request being denied, a service around the affected area?**	n/a
	Not applicable.	
2.13	**Are appropriate arrangements for transiting aircraft in place in accordance with stated commitments?**	n/a
	Not applicable.	
2.14	**Are any airspace user group's requirements not met?**	n/a
	Not applicable.	
2.15	**Is any delegation of ATS justified and acceptable? (If yes, refer to Delegated ATS Procedure).**	n/a
	Not applicable.	
2.16	**Is the airspace structure of sufficient dimensions with regard to expected aircraft navigation performance and manoeuvrability to contain horizontal and vertical flight activity (including holding patterns) and associated protected areas in both radar and non-radar environments?**	Yes
	No change to existing arrangements, although navigation accuracy will in theory be improved.	
2.17	**Have all safety buffer requirements (or mitigation of these) been identified and described satisfactorily (to be in accordance with the agreed parameters or show acceptable mitigation)? (Refer to buffer policy letter).**	n/a
	Not applicable.	

2.18	**Do ATC procedures ensure the maintenance of prescribed separation between traffic inside a new airspace structure and traffic within existing adjacent or other new airspace structures?**	
	There should be no change to existing procedures - TBC – DAP IFP by 1 March	
2.19	**Is the airspace structure designed to ensure that adequate and appropriate terrain clearance can be readily applied within and adjacent to the proposed airspace?**	
	Details TBC from IFP by 1 March	
2.20	**If the new structure lies close to another airspace structure or overlaps an associated airspace structure, have appropriate operating arrangements been agreed?**	n/a
	Not applicable.	
2.21	**Where terminal and en-route structures adjoin, is the effective integration of departure and arrival routes achieved?**	Yes
	All RNAV SIDs have connectivity with the en-route network as per conventional procedures.	

3.	**Supporting Resources and CNS Infrastructure**	**Status**
3.1	**Is the evidence of supporting CNS infrastructure together with availability and contingency procedures complete and acceptable? The following are to be satisfied:**	
	▪ **Communication**: Is the evidence of communications infrastructure including RT coverage together with availability and contingency procedures complete and acceptable? Has this frequency been agreed with S&S Section?	Yes
	No change to existing arrangements.	
	▪ **Navigation**: Is there sufficient accurate navigational guidance based on in-line VOR or NDB or by approved RNAV derived sources, to contain the aircraft within the route to the published RNP value in accordance with ICAO/Eurocontrol Standards? Eg. Navaids – has coverage assessment been made eg. a DEMETER report, and if so, is it satisfactory?	Yes
	DME coverage diagrams provided – satisfactory DME coverage exists within the LTMA, although as with the Trial, an IRU is required for all procedures for initial departure guidance until above approximately 1400ft.	
	▪ **Surveillance:** Radar Provision – have radar diagrams been provided, and do they show that the ATS route / airspace structure can be supported?	n/a

	No change to existing requirements.	
3.2	**Where appropriate, are there any indications of the resources to be applied, or a commitment to provide them, in line with current forecast traffic growth acceptable?**	Yes
	No change to current staffing required.	

4.	Maps/Charts/Diagrams	Status
4.1	**Is a diagram of the proposed airspace included in the proposal, clearly showing the dimensions and WGS84 co-ordinates?** **(We would expect sponsors to include clear maps and diagrams of the proposed airspace structure(s) – they do not have to accord with AC&D aeronautical cartographical standards (see CAP725), rather they should be clear and unambiguous and reflect precisely the narrative descriptions of the proposals. AC&D work would relate to regulatory consultation charts only).**	Yes
	Diagrams to show existing conventional SID and proposed RNAV SID centrelines, and track dispersion plots were clearly shown in the ACP at Figures 2-14. Standalone PDFs **(FLAG G)** were included with the consultation package (see Notes in ACP package for explanatory details). The same PDFs were supplied with the ACP but with selectable layers showing populations, heat density plots of departing aircraft, conventional and RNAV centrelines, together with the NPRs portrayed. The PDF versions with the selectable layers can be enlarged to show land features and areas of urban populations. (If necessary DAP management may wish to use the e copies to view the presentation of different data). It should be noted that during preparation for consultation, the DAP Case Officer made a number of recommendations to Gatwick in order to improve quality of diagrams in the consultation document to ensure clarity of proposals and readability of text which proved difficult to read (issue with clarity of text) when the Draft consultation material was provided to DAP for review prior to publication. Unfortunately, the final recommendations from DAP did not appear to be addressed and Gatwick commenced the consultation with less than clear diagrams. It was therefore of no surprise that a number of stakeholders complained about the quality of the diagrams in the consultation document due to their varying IT capabilities. However, after some early feedback, Gatwick addressed this issue and Gatwick subsequently produced high quality PDFs which were available on their airport website from 1 October 2012 which are the versions which were supplied with the consultation evidence. Whilst some explanatory detail could have been added to the key for these diagrams to enhance interpretation, in essence, the net effects of the impacts could be clearly seen.	

	High quality charts were also provided by the [redacted] with the ACP submission which show an accurate portrayal of the SID procedures which are accompanied by the appropriate RNAV1 navigation database coding tables. These are subject to scrutiny by the DAP IFP expert; however, these charts are of excellent quality, and will be updated following IFP assessment and final Gatwick and LTC ATC review, to ensure all appropriate information can be provided to AIS with the Forms 933 to assist AIS with the AIP SID chart production. This is a vital package which is an essential ingredient in the AIS promulgation process and will help to reduce workload of the AIS cartographers.
4.2	**Do the charts clearly indicate the proposed airspace change?** Yes RNAV1 SIDs with appropriate details for AIS charting supplied. Clear diagrams in the ACP at Figures 2-14 to show the nature of the RNAV SID proposals, together with the ability to analyse the PBN replication aspects.
4.3	**Has the Change Sponsor identified AIP pages affected by the Change Proposal and provided a draft amendment?** Yes New charts and navigation database coding tables were supplied with the ACP. Following compliance checking, comments on these charts and tables were raised. Revised charts were supplied to DAP. Final charts and navigation coding database tables are subject to updates and amendments prior to submission to DAP. Details for AD 2.21 NPR characteristics for RNAV SIDs is not required following confirmation from DfT (e mail from DfT 26 Nov 12 - FLAG I.

5.	Operational Impact	Status
5.1	**Is the Change Sponsor's analysis of the impact of the change on all airspace users, airfields and traffic levels, and evidence of mitigation of the effects of the change on any of these, complete and satisfactory?** **Consideration should be given to:** **a) Impact on IFR GAT, on OAT or on VFR general aviation traffic flow in or through the area.**	Yes
	GAT which is RNAV1 certified will be able to take advantage of their PBN capabilities with the introduction of the first RNAV1 SIDs in the UK. Those non-RNAV1 equipped and certified aircraft /crews, will be unaffected and will be able to use conventional SIDs until such time as conventional SIDs are withdrawn and a PBN mandate effectively requires an RNAV1 capability in the LTMA. OAT and GA will not be affected.	
	b) Impact on VFR Routes.	n/a
	Not applicable.	
	c) Consequential effects on procedures and capacity, ie on SIDS, STARS, holds. Details of existing or planned routes and holds.	n/a
	No impact on capacity as conventional SIDs will be retained until withdrawn as previously covered. SIDs are described in the ACP Appendix A – the [redacted] design report.	
	d) Impact on Airfields and other specific activities within or adjacent to the proposed airspace.	n/a
	No impact.	
	e) Any flight planning restrictions and/or route requirements.	n/a
	None required.	
5.2	**Does the Change Sponsor Consultation letter reflect the likely operational impact of the change?**	Yes
	The consultation document indicated that the implementation of RNAV1 SIDs would reduce and concentrate track dispersion of departures thereby reducing divergence from NPRs but that noise will re-distributed and that some residents will be over flown less whilst others will be over flown more. The benefits to crews are those gained from the implementation of PBN. Benefits to controllers are a potential for reduction in workload, however, until a fully systemised ATM system, is introduced (potentially with LAMP), the benefits for controllers are difficult to quantify in the interim period between proposed implementation date, and the planned LAMP implementation.	

IMPACT TO PEOPLE ON THE GROUND – DAP CASE OFFICER COMMENTS

The consultation document explained in a rather 'roundabout way' that the track dispersion experienced with the current Trial SIDs could be expected on the new RNAV SID designs depending on which design criteria was applied to the new RNAV SIDs replicating the conventional procedures, therefore implying a similar dispersion depending on the nature of first turns with the different procedures. Routes 1-3 all showed a tidy track dispersion within the NPR, however, Route 4 – the CLN2X Rwy 26 'wrap-round' profile showed that the aircraft would also fly slightly outside the north west extremity of the NPR (which is equally evident with the existing conventional SIDs) as they approach 4000ft (the limit for vectoring on this NPR). The consultation document referred to SIDs by way of route numbers:

Route 1 Trial SID Rwy 26 straight ahead procedure (SAM1X).

Route 2 Trial SID Rwy 08 quarter turn to the right (SFD2Z).

Route 3 Trial SID Rwy 08 'wrap-round' turn (approx 180deg) to the left (SAM2Z).

Route 4 Trial SID Rwy 26 'wrap-round' turn (approx 180 deg) to the right (CLN2X).

The ACP proposals for Routes 1-4 were all proposed for implementation as designed and as used during the Trial, with track dispersion diagrams provided in the consultation document and ACP based on the evidence gained from the respective RNAV SID Trial; this was a most helpful way to indicate the impacts of concentration of traffic which is in line with Government policy.

For all remaining conventional procedures, Gatwick advised consultees that the track dispersion experienced with the trial procedures could be expected on the remaining replication SIDs dependent on the design criteria applied to each remaining SID as follows:

Route 1 dispersion expected on: Route 1 Rwy 26 KENET1X, Route 5 Rwy 08 BIG1Z, CLN1Z, DVR1Z, and Route 6 Rwy 08 LAM1Z.

Route 2 dispersion expected on: Route 7 Rwy 26 BOGNA 1X, HARDY1X, and Route 8 Rwy 26 SFD1X.

Route 3 dispersion expected on: Route 3 Rwy 08 KENET1Z, and Route 9 Rwy 26 tactical use SIDs: DAGGA1X, TIGER1X, WIZAD1X.

Route 4 dispersion expected on: Route 4 Rwy 26 BIG1X, DVR1X, LAM1X.

There were some objections for the proposals. The DAP Case Officer review of these objections and action taken is discussed below.

ROUTE 5 (RWY 08 TO THE EAST)

1. Residents in the Dormansland area (5 in total), (see location in FLAG G 5) believed track dispersion would be further south than at present. We initially believed this view may have been taken by respondents misinterpreting the Route 5 track distribution diagram and mistaking the relevant NPR CL, the conventional and RNAV CLs as shown in the consultation diagram, as the Route 1 conventional and RNAV1 track distribution diagrams show a fairly condensed track dispersion because the procedure is a straight ahead departure without turns of significance compared with wide dispersion often seen with conventional SIDs on turning departures. There is no reason to doubt that the Route 5 RNAV dispersion will be any different to that shown for the conventional departures as is evident on Route 1 departing from Rwy 26; one must also remember that as soon as 3000ft (day) and 4000ft (night) is reached, aircraft may be vectored. Aircraft will also be centrally positioned along the centre of the NPR, so, the proposed RNAV SID complies easily with existing NPR parameters, and also complies with Government guidance in concentrating traffic.

2. The DAP Case Officer queried what action had been taken by Gatwick in light of the issues raised by residents from Dormansland. The query and response is at FLAG J 1 A (extract below):

DAP query: Having analysed feedback from stakeholders in the Dormansland area, I note that the conventional SID centreline appears to be displaced slightly to the south of the NPR centreline, and that the RNAV SID centreline seems to replicate the conventional centreline fairly accurately, yet some residents in Dormansland have indicated their objections to the RNAV SID which they believe will result in aircraft being further south than at the moment. Could you confirm with your APD that the RNAV nominal track reflects the conventional procedure and confirm what the distribution of traffic on Route 5 is expected to be as it passes Dormansland.
Gatwick Response: P-RNAV centreline on Route 5 does indeed replicate the Conventional SID route centreline (see table 2 in ACP document which confirms that there is a 16m difference between the two centrelines). We anticipate that traffic distribution on P-RNAV SID replication on Route 5 will be similar to conventional swathe shown.

On 17 Dec 12, the DAP Case Officer asked the DAP IFP SID expert for his opinion on whether traffic distribution would be expected to be as forecast, whether traffic would be further south than at present, and whether any adjustments could be to made to the positioning of waypoints to better replicate existing conventional departure tracks, thus matching the existing swathe. Following a verbal briefing from the SID expert 11 Jan 13 (Flag J1 B), the RNAV CL follows the Conv CL (with a 16m displacement as per ACP/brief from Gatwick). He advised this could result in aircraft flying south of the NPR CL as some residents thought would happen. Note: we do not know how aircraft FMS have the existing route coded up. Options for consideration are:

1. Ascertain how procedure is coded and 'back engineer it' (not sure of practicalities).
2. Reposition waypoint KKE02 to achieve a better replication.
3. Progress with proposed design, advise Gatwick to monitor track-keeping and determine any adverse impact, then determine if Option 2 is necessary.

Note: It could be easier to ask Gatwick to have adjustments made before implementation; however, there is the obvious risk that the result may still require a modification. It may therefore be more efficient to trial the proposed design first, then assess the impact and results, then make changes if appropriate. The Director is recommended to consider these options when preparing the decision for implementation (see final recommendation).
Note 1: On 14 Jan 13, the DAP Case Officer appraised Mgr ATC of this potential course of action and he was in agreement.
Note 2. On review of Op Report Ver 3, ADAP 1 recommended implementation of the design as submitted, then monitor.

ROUTE 2 (RWY 08 SFD 2Z AS FLOWN DURING THE TRIAL)

1. Some residents in the East Grinstead Area complained that aircraft would be closer to East Grinstead (see FLAG G 2) – on the eastern side of the NPR after the first turn) as opposed to following the existing conventional track main dispersion track which is either on the conventional CL or just to the west of it. To see the issues, comparison of the conventional track dispersion plots and RNAV Trial dispersion plots is necessary. Whilst there is a wider dispersion of conventional aircraft, the RNAV dispersion is indeed slightly further east than the conventional main flow of departures; given the width of the NPR swathe is 1.5km either side of the NPR CL, it can be seen that the RNAV dispersion does move the main concentration further east by approximately 0.75km (0.5NM). [redacted] From feedback provided from Gatwick (see FLAG J3 Serial 13), there does appear to have been some co-incident adjustment to the tracks flown by [redacted] aircraft, but this was apparently down to some adjustments in their FMS conventional procedures when magnetic variation changes were made. **Note: there has been no change to the alignment of the SFD conventional or RNAV Trial SID.**

2. Once the consultation feedback was reviewed by the DAP Case Officer, he elected to ascertain from Gatwick what action Gatwick had taken to examine if there were any other options for designing the SFD RNAV SID to better replicate the conventional SID. As can be seen from the response at FLAG J 1 A, the procedure designer was unable to design the procedure with an earlier turn due to the strict RNAV design criteria. Mgr ATC Gatwick also advised of the impact of having an earlier turning point – the attached diagram of Flag J1A explains the problem and potential impact. See also the response at FLAG J 2. Therefore, the RNAV design as trialled was the proposal that Gatwick has submitted with the ACP.

3. There is no question that departures may be closer to East Grinstead than flown using the conventional procedure, however, the RNAV Trial clearly shows that departures are achieving a reduced departure swathe and track dispersion around the first turn and that the RNAV Trial SID fully complies with all NPR parameters; consequently the RNAV SID also complies with Government guidance in concentrating traffic.
Note: The mag var change by [redacted] would seem to have resulted in a 'shift' of [redacted] aircraft further east which may be what the East Grinstead residents were concerned about. Mgr ATC Gatwick also advised that [redacted] have placed a 220kt restriction on the conventional procedure for better track keeping within the NPR (like the RNAV Trial SID).

4. To determine if there were any other options to better replicate this SID, the DAP Case Officer asked the DAP SID Specialist to advise if he considered there was scope to improve the replication. By 17 Jan, it was subsequently determined that other options were not possible. The request and the response is at Flag K.

ROUTE 4 (RWY 26 CLN2X)

1. As previously discussed in Section 1.3, the RNAV Trial SID results in some aircraft leaving the NPR at the north western extremity, a fact which is also evident for the conventional SID. The consultation document and the ACP highlighted problems with NATS' attempts to determine if any other options for improved track keeping were feasible. The NATS evaluations indicated a redesign was not feasible. With the initial DAP review of this issue, it was unclear whether any other options were actually feasible to keep the departing aircraft within the NPR swathe.

However, during the course of the Case Study, on 17 Dec 12, and 9 Jan 13, the DAP Case Officer, asked the DAP SID design specialist if there were any other alternatives which could be considered. Options were considered, discussed with Gatwick, and then confirmed as not viable from an ATC operational point of view. The request and outcome is at FLAG L for reference. Additionally, to consider environmental impacts of other alternative designs (whether feasible or not), after DAP internal discussion (8 Jan 13), ERCD were requested to examine potential impacts if different design characteristics were used. The ERCD outcome was not provided but has now been superseded by events.

2. The bottom line is that **the existing Route 4 NPR via ACORN is not fit for purpose in portraying the normal track dispersion for all conventional and RNAV departures.** This is quite apparent when comparing the track to the similar 'wrap around' turn off Rwy 08 with a left turn out to SAM (Route 3). On the Route 3 Trial SID, the RNAV track keeping showed a marked improvement in track dispersion and hence reduced concentration. When the Route 3 and Route 4 NPRs are viewed against each other, it is easy to see why there is so much difficulty for aircraft to adhere to the Route 4 NPR as the Route 4 results in a tighter turn than Route 3, and the NPR parameters clearly show the Route 4 NPR further south than the NPR for Route 3 – this is why aircraft find it difficult to adhere to Route 4 NPR because it is the most difficult route to fly given the tightness of the first turn. [redacted]

3. The other red herring quoted by Gatwick is that there are issues because of magnetic variation. Whilst the magnetic track has been changed from time to time over the years, we do have a map dated 1993 (FLAG N) which shows the difference in NPR CLs for Route 3 and 4, so this issue has been in existence for a very long time. It is an Airspace Regulation view that whilst most legacy UK SID procedures seem to have been designed at 185kts and that the older generation aircraft such as the 1950s and 1960s turbo prop aircraft and the likes of the BAC 1-11 and B 737 first generation aircraft could fly these procedures (probably hand flown in the early days before the use of the FMS or autopilot), modern generation aircraft using conventional overlays, or even RNAV1 procedures are not able to fly a tighter turn on Route 4 in a clean configuration because of the flyability issues and Angle of Bank required.

4. Gatwick confirmed (e mail 14 Jan) that the typical use of Route 4 SIDs by the larger aircraft generally are B773 and A330 types via DVR, and B772 and B744 via LAM. Mgr ATC checked again with [redacted] and they advised that if aircraft are flying the CLN2X (and the remaining Route 4 RNAV SIDs) at the maximum 220kts then they would expect larger aircraft to fly a very similar track (i.e. the one seen in the heat plots). Some 'heavies' (A340 and B744) asking to fly the procedure at a higher speed may have trouble maintaining the centreline and may fly further to the north. However, the 220kts speed restriction applicable on both Route 4 SIDs and on Route 3 (SAM2Z) should easily be maintained (see compliance on SAM2Z).
It should be noted that whilst no wide bodied / heavy aircraft flew the trial procedure, Trial participants were in the main B734/B735, or the A320 family.

DAP Case Officer's comments on DAP Route 4 Considerations:

The DAP SID design specialist has considered what parameters would have to be flown by aircraft in order that they would remain within the NPR. It was thought that an initial speed of 185kts during the first turn, then followed by an increase to 220kts for the second turn may enable the turn to be flown tighter than the CLN2X profile as designed for the trial. As alluded to above, this was discussed with Gatwick who advise that they had already considered this type of profile and found that it would not be acceptable from an ATC operational point of view.

Note: The precise details provided from the DAP SID design specialist are at Flag L for information only.

OTHER CONSULTATION FEEDBACK

As detailed in the Feedback report, there were several themes on feedback to consultation: objections on noise, concentration (mainly on Route 2 (SFD) where there is impact on East Grinstead), LAQ, property prices and consultation process employed (the strongest objection being from [redacted]

There will potentially be some impact on noise as aircraft will be more concentrated than before; however, this is in line with Government policy. ERCD believe there would be no impact on LAQ as RNAV SIDs do not create any differences to LAQ. Property prices are not something which is considered when the CAA reviews airspace changes. The consultation process did cause some stakeholders some irritation, but this could be attributable to clarity of diagrams, not being familiar with the airspace change process, not knowing that it was acceptable to conduct the methodology that was applied, and not being aware of the advice concerning noise modelling. From the outset, following the Framework Briefing, it was confirmed that as the changes were beyond the impacts of the Leq contours, there was no requirement to do noise modelling for Leq contours and SEL footprints. It was unfortunate that the details were not correctly announced on the Gatwick Website, however, this issue was resolved (the Consultation report covers this in slightly more detail).

ORGANISATIONS' RESPONSES (green highlighting below for no objection, red for objection). For locations, see NPR map at Flag N.

ORG 1A. [redacted] (on the Rwy 08 Route 3 Turn) commented on Gatwick providing additional soundproofing, and that LAQ measurements should be conducted.

ORG2A. [redacted] is a long way south on western edge of the NPR on Route 2 (SFD) SID (see Flag G2) and asked for noise measurements. There will be limited impact this far away as aircraft can be vectored well before this point and should be at least around 5000ft.

ORG3A. [redacted] provided quite a detailed response mainly on process, proposals for monitoring the implementation, and quality of diagrams and the explanatory detail. They did not: 'per se object to the implementation of RNAV technologies', but thought that Gatwick could work more closely with the community. As a result, Gatwick published a list of FAQ (ORG3B) on their website to address the GATCOM comments.

ORG4A. [redacted] commented that most of the routes did not affect [redacted] but provided some comments on the management and oversight process.

ORG5A. [redacted] made some general comments rather than specifics:

- Concentration would benefit some residents but make it worse for others. They commented that dividing NPRs so aircraft could use one half or the other, would result in more people being overflown which is contrary to trying to reduce number of people affected.

- Concentration rather than dispersion over a wider area has a severe and adverse environmental impact on residents in the District who are under the flight path. Compensation should be provided to those under flight paths in the form of financial assistance towards a higher standard of sound proofing for noise sensitive premises within the 57dBA Leq_{16} noise contour.

- [redacted] supported the [redacted] response.

- [redacted] suggested more NPRs be established and that [redacted] needed to be involved more in the debate as they are affected by the Rwy 26 arrivals as well as the Rwy 08 Route 5 SIDs.

ORG6A. [redacted] Commented that aircraft should avoid the 7km zone of special protection around Ashdown Forest (way off to the east of Route 2).

ORG7A. [redacted] (north of Uckfield). [redacted] agreed to all proposals providing proposed routes and flight paths did not change from what was proposed.

ORG8A. [redacted] (Near East Grinstead). Complained about noise, quality of life, property values, concentration, and suggested re-routeing.

ORG9A. [redacted] Were happy.

ORG10A. [redacted] Objected to the proposal (on the grounds aircraft would be closer than previously with the Conv CL). They complained about the [redacted] shift further east (this was the change [redacted] made with adjustments to mag var). They suggested aircraft should be more on the CL. They were broadly supportive of the management process.

ORG 11A. [redacted] (west side of East Grinstead). Complained about noise, the [redacted] issue and stated that ac should fly on the west side of the CL.

ORG12A. [redacted]

- Significant majority of this [redacted] had no objection to the implementation.
- [redacted] recognised the impacts of concentration.
- They asked Gatwick to raise the importance to operators to fly the new procedures so meaningful data could be gathered to enable analysis.
- They supported the management oversight process, but requested more data on the criteria to be used if a route has to be withdrawn due to adverse feedback after implementation.
- Suggested appointment of a suitably qualified acoustic consultant to measure gains and losses in conjunction with NATMAG (the airport noise and track-keeping monitoring organisation).
- Suggested GAL consider whether there is potential for increased concentration of pollution levels and whether there is a need to undertake specific air quality monitoring.

ORG14. [redacted]

- Supported in principle RNAV implementation.
- Noted impacts of noise and disturbance with concentration.
- GAL should closely monitor implementation.
- Like [redacted], requested more data on the criteria to be used if a route has to be withdrawn due to adverse feedback after implementation.
- Commented on implications with over flight of AONB and National Parks and legal duties to have regard to the purposes of National Parks and AONB to help preserve the tranquillity of the countryside.
- Requested implementation to be closely monitored.
- Over flight of AONB should be avoided (DAP Case Officer comment: almost impossible to achieve).

ORG15A. [redacted] Commented on legibility of diagrams. Supported [redacted] and [redacted] views.

ORG16A. [redacted] (Route 9 tactical SIDs only). Ac are sufficiently high not to cause a problem. Made a point that they would be concerned if routes were to be flown regularly.

ORG17A. [redacted]. Comments:

- Supported withdrawal and reversion process.

- Requested more data on the criteria to be used if a route has to be withdrawn due to adverse feedback after implementation.

- Considered it is necessary for a full independent assessment to be carried out of the noise and disturbance impact, including air pollution, on affected Surrey communities and the relative gains and losses measured.

- GAL and the CAA consider how any detrimental impacts on those who may suffer increased disturbance as a result of the concentration of flights over the same RNAV flight path and what amelioration schemes may be required.

ORG18A. [redacted] (Route 5).

- There are approximately 3000 residents in [redacted] the village lies in the High Weald AONB. Concentration may not be an acceptable solution to the problem of aircraft noise. [redacted] also have an issue with Rwy 26 arrivals and more noise because they state arriving aircraft are lower than they used to be on the approach and are lowering undercarriage earlier before they overfly the village (previously it would be lowered after they passed the village), now adding to aircraft noise.

- Concentration must be debated with those communities affected before decisions taken.

- There should be more NPRs for respite.

- More detailed research is required to establish whether new routes cause more or less disturbance.

- Three schools are affected

- The September presentation was not well received by some.

ORG19A. [redacted]

- Route 3 – unlikely to result in any significance difference.
- Route 4 – Some people will benefit, some will not.
- Route 7&9. Seems unlikely to have any significant change.
- Overall, RNAV routes over [redacted] seem reasonable in view of close alignment with existing SIDs.
- Concentration is in line with Government policy.
- If RNAV SIDs result in significant objections and harmful impacts, they should be mitigated and amelioration schemes put in place or revert back to existing SID routes.

ORG20A: [redacted]

- Comprises the villages of [redacted]; their elevation is between 750-1000ft AOD (amsl or above aerodrome?).
- Welcomes emerging strategy on concentration, but were very surprised with a Gatwick announcement that Gatwick were announcing expansion plans only 12hrs after being briefed at a [redacted] presentation where Gatwick indicated that airport capacity was at 70% and as a consequence, future proposals would not be considered until 2025.
- [redacted] joined objections made by [redacted] and neighbouring [redacted]
- RNAV SID will significantly increase noise over [redacted] and [redacted] They were also concerned about impacts of a second runway.
- Greater impact on [redacted] with a greater number of flights compared with Conv SID.
- Proposals require further careful consideration and discussion with communities surrounding Gatwick which will suffer greatest impact.

6.	Economic Impact	Status
6.1	**Is a provisional economic impact assessment to all categories of operations and users likely to be affected by the change included and acceptable?** **(This may include any forecast capacity gains and the cost of any resultant additional track mileage).**	N/A
	[To be provided by Head of ERCD]	

Case Study Conclusions – To be completed by DAP Project Leader	Yes/No
Has the Change Sponsor met the DAP Airspace Change Proposal requirements and Airspace Regulatory requirements above?	Ongoing

The proposals were subjected to consultation through the LACC for Gatwick, and published on the Gatwick Airport Website. As details were notified by way of a press release, DAP APCC was alerted to the lack of public information on the Gatwick website. Following a complaint from a member of [redacted] DAP engaged with Gatwick to determine the publication issue. The issue was resolved, and following advice from APCC, Gatwick elected to extend the period for considering consultation responses due to the delay with the initial publicity. Whilst there were some objections to the proposals, mainly from residents in Dormansland (Route 5), the East Grinstead Area (Route 2), a general objection from [redacted] and a few complaints in respect of Route 4, the aspiration of Gatwick to implement a full package of RNAV1 SIDs is in line with UK PBN policy, and is line with Government policy to concentrate departing traffic.

With the exception of a slight excursion of the NPR on Route 4, all Trial SIDs were compliant with the NPR requirements. The Gatwick analysis of track dispersion data shows very tidy track dispersions on Routes 1, 2 and 3, and therefore, there is every likelihood that track dispersion on the remaining conventional routes where the RNAV1 SIDs are proposed will be extremely similar to the dispersion shown on the Trialled RNAV SIDs. There is no reason to doubt that that track keeping on Routes 5-9 will result in good NPR adherence, and whilst the likelihood is that there will be more concentration on these routes (as shown from the Trial SIDs track data dispersion plots) this is in line with Government Policy.

It is noted that the Route 4 NPR issue is an area for DfT to provide guidance in respect of what action needs to be taken to reflect the actual flight paths flown, especially in light of the tight turn compared to its counterpart (SAM2Z) departing from Rwy 08 with the left turn. [redacted]

Summary of DAP SID Design Specialist re-examination to be reflected as an addendum when all design issues resolved

OVERALL RECOMMENDATIONS

1. Approval of the **Route 5** design is recommended. However, Gatwick should be advised to monitor track-keeping, determine if there is an impact to Dormansland, then if necessary and appropriate, consider repositioning waypoint KKE 02 to improve track dispersion to better replicate the conventional traffic distribution.

2. Approval of the **Route 2** design (continuation of the SFD 2Z (SFD 3Z WEF 7 Mar 13) is recommended.

3. Approval of the **Route 4** designs is recommended subject to successful design approval and flyability check of the Rwy 26 BIG1X SID.

   Note: Mgr ATC has been appraised from the outset that a delay with Route 4 implementation might be a possibility because of [redacted], therefore it would be no surprise if this was the decision by the Director.

4. Implementation of all other routes is recommended subject to design approvals, and flyability checks on the Route 7 (BOGNA/HARDY), Route 8 (SFD1X), and Route 9 (Tactical SIDs – TIGER/DAGGA/WIZAD).

5. DAP determine specific post implementation track keeping assessment requirements and provide details to Gatwick.

6. Gatwick Airport Limited is advised to determine specific post implementation track keeping assessment action and methodology, brief DAP prior to implementation, and provide monthly reports to DAP in a format to be agreed.

7. DAP conduct the PIR one year after implementation, or if enough statistical data is available from the monthly reports which enable an earlier assessment to be completed, then this option could be considered.

8. Future policy must be clarified so sponsors of PBN replications know exactly what details have to be included for future consultations. A DAP Policy Statement is currently under development, and will be finalised in due course.

9. DAP Case Officer should conduct a 'Lessons Learnt' exercise to highlight aspects which could be improved and would be of benefit for future PBN replication proposals.

Outstanding Issues		
Serial	**Issue**	**Action Required**
1	Route 4 NPR action TBC by DfT	DfT to advise
2	RNAV SID designs and compliancy checks.	DAP IFP to confirm
3	Flyability of BIG1X, SFD1X, TIGER1X and BOGNA/HARDY if required	NATS to provide appropriate evidence; details to be checked by DAPIFP.
4	Data base validation checks prior to implementation	Gatwick to arrange
5	Containment	DAP IFP to confirm
6	Terrain (should be no change)	DAP IFP to confirm
7	AIP amendment instruction	Gatwick to provide Draft copies of F933 to DAP for approval

Additional Compliance Requirements (to be satisfied by Change Sponsor)	
Serial	**Requirement**
1	DAP to determine specific post implementation track keeping requirements and provide details to Gatwick.
2	Post Implementation monitoring process to be confirmed to DAP.

Recommendations	Yes/No
Is the approval of the SoS for Transport required in respect of the Environmental Impact of the airspace change?	TBC
The DfT expect to be notified of the approval of the RNAV SIDs; however, as discussed, if the Route 4 NPR is to change, then DfT approval is required. DfT have therefore to clarify the position, and indeed, with the CAA FAS, further PBN replications will become more evident, and therefore future policy must be clarified so sponsors of PBN replications know exactly what details have to be included for future consultations.	
Is the approval of the MoD required in respect of National Security issues surrounding the airspace change?	n/a
Not required	

General Summary

The proposal for permanent RNAV1 SIDs is somewhat long overdue, given the Trials commenced in 2007. However, there are mitigating circumstances, and given that the TC North Change did not materialise, this will be the first RNAV1 implementation of procedures in the UK.

The RNAV1 SID designs have been examined by the DAP IFP SID specialist. Confirmation that all designs are compliant with ICAO and CAA design requirements is dependent on the final re-submission of designs and approval by DAP IFP specialist.

UPDATE THIS SECTION WHEN COMPLETE

The implementation will provide benefits to crews who will be able to use permanent RNAV1 procedures in the UK; whilst achieving better track keeping adherence, there will be some impact to people on the ground as some will be over flown more whilst some people will see less over flight within the NPR. The concentration of traffic is however in line with UK PBN policy and Government Policy.

Subject to SID compliancy checks, the Airspace Regulation department would therefore recommend full implementation of RNAV1 SIDs as proposed, subject to the caveats in the recommendations above. Subject to issues with Route 4 however, a staged implementation as outlined in the conclusion could be considered dependent on the outcome of DfT deliberations with the Route 4 NPR.

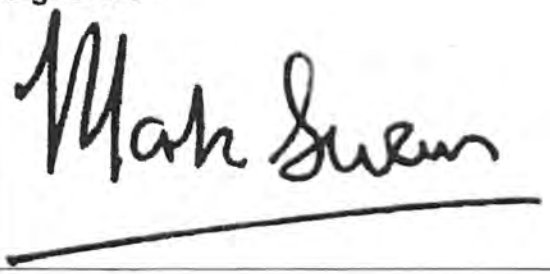
Comments

The Route 4 NPR issue is outside DAP control and relies on guidance from DfT [redacted]

Observations
Good quality design charts were submitted by the [redacted] and revised to meet a new DAP 'House Format' . Revised database coding tables will be provided by [redacted] for submission to AIS for promulgation (Telecon and e mail DAP Case Officer to Mgr ATC 10/11 Jan 12 refers). Clarity of diagrams on the initial consultation could have been improved; despite guidance from the DAP Case Officer prior to commencement of consultation, early advice did not appear to be considered by the sponsor. However, this was rectified, albeit somewhat late in the consultation period, although more explanatory detail could have accompanied the diagrams to make the diagrams easier to understand by the consultees.

Operational Assessment Sign-off/Approvals			
	Name	**Signature**	**Date**
Operational Assessment completed by (DAP Project Leader)	[redacted]	[redacted]	14 February 2013
Operational Assessment approved by (Head of Section)	[redacted]		

Case Study Sign-off/Approvals			
	Name	**Signature**	**Date**
Case Study Assessment Conclusions approved by (ADAP1/2)	[redacted]		

DAP Comment/Approval		
APPROVED		
Name M SWAN	**Signature** 	**Date** 22 Jul 2013