EAST DEVON DISTRICT LOCAL PLAN
NOISE IMPACT APPRAISAL/EXETER AIRPORT
DOCUMENTS STUDIED

APPENDIX 1

- Exeter and Devon Airport Environmental Assessment, Noise Assessment Report by Michael E House. 31st April 1999.
- New Community near Exeter, Devon, Exeter Airport Noise Impact Assessment Report by Vernon Cole Associates. 3rd April 1996.
- Clyst Hayes New Community, Exeter Airport Noise Report (1999) Review by Cole Jarman Associates. 6th July 2000.
- Clyst Hayes Airport Noise Measurements by Cole Jarman. September 2000.
- Assessment of Noise Impact on Proposed Residential, Southbrook, Exeter, by Wimtec Environmental Ltd. June 2000.
- The Impact of Noise on the Choice of New Settlement Sites Southbrook/Clyst Hayes, by Wimtec Environmental Ltd. December 2000.
- Clyst Hayes, Devon, Proposal for a New Community, Housing Development in Proximity to Airports in England, A Research Note by David Lock Associates. August 1997.
- Skypark and EDAL Development, Transportation Impact Assessment by Halcrow Fox. January 2000.
- Exeter Gateway: International Freight Terminal, Planning and Development Overview by Cluttons. June 2000.
- East Devon District Local Plan 2001-2011, Issues Report.
- Devon Structure Plan First Review - 1995 to 2011 Explanatory Memorandum (September 1999) pp 18-27, pp 68-69, pp 104-106.
- East Devon District Local Plan Revised Deposit Version - 1997 p 101.
- Department of the Environment. Planning Policy Guidance, Planning and Noise PPG 24. September 1996.

Appendix 1 Continued ...

- East Devon District Local Plan Proposed Residential Developments around Exeter Airport. Noise Appraisal. Bickerdike Allen Partners: 12.02.01.

- Letter of 12th March 2001 from R Thomas of British European to East Devon District Council, (including comments on BAP's first report).

- Letter of 13th March 2001 from G Myers of Exeter International Airport to East Devon District Council, (including comments on BAP's first report).

- Letter of 23rd March 2001 from J Charles of BAP to East Devon District Council (responding in part to comments raised by British European and Exeter International Airport on BAP's first report.

- Letter of 16th May 2001 from V Cole for Clyst Hayes to BAP, (including comments on BAP's first report).

- Letter of 4th June 2001 from W Stubbs for Southbrook to BAP, (including comments on BAP's first report.

- Letter from BAP of 5th June 2001 to W Stubbs for Southbrook (responding to comments).

- Fax of 11th June 2001 from W Stubbs for Southbrook to BAP (responding to BAP's letter of 5th June).

WITH RESPECT TO BAP NOTE 02

- Letter of 11th June 2001 to BAP from V Cole for Clyst Hayes.

- Letter of 22 June 2001 to E.D.D.C. from M G. Holley British European.

ISO 9002 SGS
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British European
part of Walker Aviation

Aviation Services Division

12th March 2001

Mr T Bolshaw
Principle Planning Officer Policy and Conservation
East Devon District Council
The Knowle
SIDMOUTH
Devon

Dear Mr Bolshaw

Thank you for your letter of 16th February 2001 requesting comments for the Council's Local Plan Member Working Group regarding the development of Exeter International Airport.

In the autumn 2000 we unveiled a five-year business plan for the expansion and continual growth of the business. Our aim with this plan is to increase our maintenance capacity for regional turboprop and jet aircraft.

As part of our initial investigations we evaluated how and in what area's of the business we could expand. Exeter Airport presented an ideal location to expand our core business stream of aircraft base maintenance. We have decided through the business plan that the potential for Exeter as a maintenance base is enormous. We have projected that we will be doubling our Exeter aircraft maintenance based workforce to c.500 as well as doubling our revenue through this period. This excludes any projected growth with the British European Airline Division which currently employ's a further 600 staff at the existing Exeter location.

At the present time we maintain over 100 aircraft for our own airline and other European third party operators representing inward investment into the region. At present we maintain a large number of BAe 146 aircraft as well as Dash 8's, Shorts 360's, ATR's, F27's and Canadair Regional Jets. Over the coming five-year period we are looking to take our aircraft maintenance fleet to over 200 aircraft. British European has just placed an order for 20 British Aerospace Systems RJX aircraft.

An integral part of the five-year plan for Aviation Services Division was for the introduction of a new hangar on the Exeter site, to be operational by the summer of 2002. This facility would allow us to double our present capacity to eight aircraft on maintenance check at any one time.

Our business plan has been developed not only to take account of where our primary business is are the present time, but where we are likely to be heading in the future. In

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the planning of the new hangar this has led us to think that in five-years time we may be operating beyond the regional aircraft market. For this reason the new hangar development will be able to accommodate up to Boeing 757 aircraft.

Looking at the impact on the airport in terms of engine ground running (EGR), the moving up to Boeing 757 would require the EGR of the larger Rolls Royce RB211 engine.

A further business stream that we are avidly looking to develop is into the area of engine repair and overhauls. As the costs of the engines account for more than 25% of all of the maintenance costs, we see this as a large area of potential business that we are at present missing out on. Should we enter into this business stream, we would certainly be increasing the amount of EGR.

At the present time we carry out EGR's on the North side of Exeter Airport. Typically we take two aircraft per day out for EGR's. The EGR consists of running of each engine alternately on full power over a defined period of time.

Of the current engines that we carry our EGR's the BAe 146 has the quietest engine. The other engine types that we currently run are the General Electric CF34, Pratt & Whitney PWC123, Pratt & Whitney PWC 150, Rolls Royce Dart, Pratt & Whitney PWC PT6.

Against the above, we therefore have great concerns that the report presented by BAP does not adequately address the projected and future growth plans for British European at Exeter International Airport, with particular reference to EGR's.

It is a pre-requisite that before an aircraft is declared serviceable for flight it is certified by a licenced engineer as fully functional within the manufacturers' and Civil Aviation Authorities requirements. In the aviation world, aircraft maintenance is a highly regulated activity and certain maintenance tasks have to be performed in pre-determined time periods. While the introduction of new aircraft has extended the periodicity of these inspections there is no flexibility to the absolute time period specified for the aircraft types. In order to maintain functionality, it is sometimes necessary to perform component change and then undertake systems checks before being able to declare an aircraft serviceable. Further while there has been significant development in engine life due to improvements in design codes and material properties, it is essential that the engines of an aircraft are monitored on a continual basis to ensure adequate performance is maintained. While it is possible to perform a significant number of system checks on a modern airliner by passive means with test equipment it is essential that certain checks are undertaken with the aircraft systems 'live' and powered up. In many cases it is possible to perform such live checks with the engines started and run only to an idle power setting. Such tests are termed 'Check Starts' and are of a minimum duration, typically of 2 minutes duration.

On occasions it is necessary to undertake checks with the engines run to full power. Such circumstances arise when it has been necessary to change an engine, for example and tests have to be made to ensure that full take-off power is available when selected. While relatively infrequent, it is fundamentally critical that such checks are

performed during the aircraft 'downtime' in the nighttime maintenance period to ensure full service availability to passengers.

The assessment of the impact of EGR appears simplistic compared to the specific investigations carried out to support night-time EGR for the Terminal 5 Public inquiry. In fact during my previous employment with British Airways as Chief Engineer I was required to present such evidence to the Public Inquiry as an expert witness.

I make this comment against the background of substantial testing carried out to determine noise attenuation over soft ground. In reality such attenuation proved to be minimal and with the effect of the prevailing South Westerly winds, it was necessary for the Airport Authority to extend the application of triple glazing and air conditioning to properties adjoining the North extremity of the perimeter of Heathrow in a 1km radius. This evidence was set against the World Health Organisation (WHO) criteria for disturbing of deep sleep at a level of 65db through a partially open window. In the context the propagation of sound by the prevailing wind direction should not be underestimated. The cost of installing the noise reduction measures to such properties was not insignificant.

Further, the assessment by BAP would appear to have underestimated noise levels of the aircraft we are likely to maintain. Again in the event of the Airline obtaining larger twin engine aircraft you should be aware that this is generally a requirement to run a 'balancing' engine to prevent the aircraft from swinging at high power.

Having therefore reviewed the BAP report and overviewing the Wilcon Homes proposed development which I believe is the closest I am extremely concerned that the noise impact of EGR is underestimated and could prove very costly in the future relation to any agreement at the Planning Approval stage.

The proposed expansion of maintenance facilities at Exeter International Airport which is supported by the Regional Development Agency, could be substantially adversely impacted by the housing development in too close a proximity. One needs to look a the Bradley Stoke development at Bristol to see how future development of the Filton airfield have been thwarted. I am very worried therefore, that the longer term viability of Exeter International Airport as a maintenance base and source of income to the South West region will be critically undermined if the BAP report is taken at face value without significant further investigation work being undertaken. I cannot over emphasise this point to you and your Local Member Working Group.

I would be more than happy to address this matter with you directly should you determine the necessity so to do.

Yours sincerely

Rob Thomas
Managing Director

exeter
INTERNATIONAL AIRPORT

Our Ref: GM/RC

13th March 2001

Mr T Bolshaw
Principal Planning Officer Policy and Conservation
East Devon District Council
The Knowle
SIDMOUTH
Devon

Dear Mr Bolshaw

Thank you for your letter of 16th February 2000 that contained the copy of the Bickerdale Allen Partners report. I apologise for my slow response but have obviously needed to consult with the airport's noise expert, Mr Michael House.

I have many comments to make on the report both in terms of the text and in terms of the parameters in table 1 and the contents of table 2. The latter responses are attached to this letter.

My detailed observations on the text are as follows:

Figure 1

Given that the Consultant had access to the latest Master Plans of the two developers why was this figure so imprecise. The figure presented an ideal opportunity to indicate both the extent of the land take over which each developer has options together with the footprint of the latest master plans. Why were these not included to better inform the Council Officers and Members?

Section 1.2 Paragraph 3

The Consultant does admit that there is uncertainty in so far as "no firm proposal and related planning submissions has been made for either development and to some extent the final layout and separation from the airport is not resolved"

Section 1.3 Paragraph 4

The Consultant states that 'Also mentioned is the possibility of development of a new aircraft maintenance facility for British European' If the Consultant had talked to British European he would have been made aware that this was more than a possibility. The location for the new hanger has already been identified and British European's business plan for this facility developed before the Consultant's appointment.

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Section 1.3 Paragraph 6

The Consultants' assumption regarding the movement of the maintenance test area to the south of runway 31 does of course depend on the progress of the Skypark development if and when it receives planning permission. The airport development is predicted to take place in 2007/2008 rather than in the 'next few years'

Section 2.3 Paragraph 1

I am reassured that the Consultant has stated that 'There are no agreed methods of noise impact assessment for this (engine ground running) activity'. I presume that this statement refers to a lack of general agreement regarding nationally accepted methods and criteria, not between the four noise consultants representing the parties in particular case.

Section 2.3 Paragraph 2 and 3

I am not convinced that in the light of the Consultants statement in paragraph 1 above that either of the two examples quoted are an authorative indication of normal practice in the UK.

Section 2.3 Paragraph 5

The Consultant states that "There is currently no information on the number of occurrences of engine test runs at Exeter". Did he not contact British European directly to examine their records?

Section 2.3 Paragraph 7

I see no reason at all for the Consultant making a decision to 'simplify the assessment of engine ground running noise by considering an engine test on a BAe 146 four engined turbo fan aircraft.

Surely the consultant was aware of the fact that turbo-fan and turbo prop aircraft have very different noise characteristics. As British European have over the past eighteen months purchased 12 Dash 8 turboprop aircraft then I feel that the consultant could have safely assumed that turboprop aircraft maintenance will continue at the Airport for some time to come and as such should have been included in the analysis as indeed has been done in our own Consultant's report which was made available to BAP.

Section 2.3 Paragraph 8

I do not consider the separation of 1000m from the Clyst Hayes development to be a 'large separation' I would also like to check the distances between the test facility and the edge of development and centre of development distance criteria used with respect to both developments using an accurate and more informative figure 1.

Subsequently in this paragraph it is acknowledged that 'there is a risk of complaints' regarding engine ground testing at night. The code of practice that exists is a voluntary code of practice that seeks to minimise but does not eliminate the requirement for engine ground running at night. Where the need has arisen in compliance with the voluntary code of practice noise complaints have been received, including from considerably further afield than the proposed Clyst Hayes or Southbrook developments as your Consultant might have verified by reference to the positions of the green and red triangle symbols in figure 1 of our Consultant's October 1999 report.

Section 2.3 Paragraph 9

The Consultant states that 'IT IS NOT POSSIBLE TO RESOLVE CLEARLY THE EFFECT OF ENGINE GROUND RUNNING NOISE ON THE RESIDENTIAL SITES WHILST THE FUTURE EXTENT AND FORM OF TESTING IS NOT CLEAR' Yet having made this statement and in the absence of any effort whatsoever to obtain more detailed information on the future extent and form of testing he sets this aside when he pronounces his findings.

Having made the above statement he makes the wholly unjustified conclusion that because of the lack of noise complaints from 'local residents some of whom (Clyst Honiton) are closer to the current engine test location than the future residents' (that) 'the noise is not likely to be unacceptable'

I am astounded by this statement being made by a professional noise practitioner. The consultant not only fails to identity that Clyst Honiton lies at a level well below the level of the airport which Clyst Hayes would not but also makes no mention of the influence of the prevailing winds on noise impact. Indeed, well documented research published by the CAA as far back as September 1982 (DORA Communication 8204) demonstrated that aircraft noise at high engine power during the ground roll is affected by the vector wind component. There is no logical reason to suppose that noise generated close to the ground from engine testing would not behave likewise

The effect of prevailing winds is evident in the road traffic noise impact of the new A30 where I understand that the vast majority of local residents complaints come from residents living to the north of the new road.

A further omission from the consultant's report is that the residents of Clyst Honiton have either been resident for some time and have grown 'older' with the Airport or have moved into the village in the full awareness of the noise impact that they may experience being located adjacent to the end of the main runway. The noise impact in Clyst Honiton is much more likely to be airborne noise as a result of its location rather than engine ground running noise for the reasons that I have indicated.

Section 2.3 Paragraph 10

Given that the Consultant makes his conclusion based on as I have indicated less than perfect 'available information' I very much dispute that his conclusion is a valid one.

Section 3

Surely this section should be headed 'Findings' as there is no 'Discussion' in it.

Section 3.1 Paragraph 4

The Consultant reiterates his assertions both regarding the fact that the impact of engine ground running in the future is not clear and again that there are 'no agreed methods of noise impact assessment for engine ground running noise' I am however in agreement with his recommendation that 'the matter of the form and number of engine ground runs, especially at night, should be considered further and clearly it would have to be considered if the planning application for a new maintenance hanger and related test area occurs'

Given the two unresolved issues identified in Section 3.3 I am frankly amazed that the consultant should have, in his summary and initial advice, made the statements that he did.

I have attached the comments of the airport's noise consultant regarding the technical basis that Bickerdale Allen have used as the basis for their findings. As you see they are highly critical of Bickerdale Allen's analysis.

My general view of the contents of the report is that it is seriously flawed both at the detailed level and in the context of the conclusions that are drawn. The conclusions seem very definite and specific whilst the text refers to the many uncertainties, unresolved issues and possibilities for change that have been identified.

I also find it incomprehensible that, having been given the brief that you gave your consultant, the timing of his appointment and the duration of the study, he failed to seek a meeting with the Managing Director of British European Aviation Services or indeed anyone else in that organisation and obtain information from him both in respect of the current engine testing situation but also more importantly in terms of BEAS's future plans. They have had such plans in place since before October 1st 2000 which I am sure they would have shared with your consultant to better inform his assessment and his findings.

Instead he has relied on the known future activities at the Airport to be those that were 'known' about at the time of the noise impact assessment undertaken by Michael House in the early parts of 1999 that resulted in the report that he produced in October 1999. This assessment was basically in support of the planning application that was submitted for a new terminal building and associated facilities that the airport company currently projects it will require around 2007/2008. With regard to engine ground testing it gave general indications of noise levels but these did not take account of topography or prevailing wind direction and were based on the aircraft types that the airport were aware were being maintained in the existing facilities.

In failing to do this I believe the study does little to advance the resolution of the issues that remain with your Council, namely to ensure that the location of any new Community can 'be developed without adversely affecting the operation of Exeter Airport and not be affected by unacceptable levels of aircraft noise'.

Could I conclude on a more positive note by suggesting that the way forward is to establish British European's proposed plans and to undertake further noise measurements related to engine ground running with appropriate aircraft types and at sites to be accepted by all parties.

Yours sincerely

GEOFF MYERS
MANAGING DIRECTOR

Comments on BAP Report Ref: A5441/R1 February 2001

1. Engine Testing

I suggest that JGC has understated the effect of engine ground testing noise for several reasons:

1.1 He adopts reference noise levels (RNL) for the BAe 146 which are lower than in my report and moreover lower than shown in the BAP measurements tabled at the meeting 29th November 2000.

1.2 He adopts the same RNL value for Clyst Hayes as for Southbrook. For a ground test with aircraft nose pointing south-west (parallel to runway 26) the nearer edge of the Clyst Hayes site spans about 80° to 130° degrees relative to the forward aircraft axis, but Southbrook spans about 130° to 150° degrees. The BAP data shows directional noise levels for a single engine at full power to range from 87.5 to 92 dB at 152 metres radius for the angular range appropriate to Clyst Hayes but 91 to 90 dB for the angular range appropriate to Southbrook. Only if we take the highest level reaching either sire edge do we get almost the same value at 92 and 91 dB respectively.

1.3 His Table 2 RNL at 600 m radius assumption for one engine running at full power is 60 dB L_{Amax}. At the meeting it was generally agreed that there was about 2 dB increase on the average (or L_{Aeq}) noise level during a steady engine running condition. So 60 dB L_{Amax} corresponds to about 58 dB L_{Aeq} for one engine at full power at 600 m radius.

His Table 2 distance attenuation data from 600 m to the distances of the nearest edges and typical distances for each site correspond to attenuation rates of 9.49, 9.53, 9.49 and 9.30 dB per doubling of distance, an average of about 9.4 dB/dd. I reported that my report diagrams for ground running corresponded to attenuation rates of 9.2 to 9.4 dB/dd but that Vernon Coles assumed 11 or 12 dB/dd and in least favourable wind direction conditions attenuation rates had been measured by VC and myself jointly at only 8 dB/dd. So using 9.4 dB/dd makes BAPs report consistent with my report diagrams, though we cannot assume that lower attenuation rates will not occur.

1.4 Sticking with the BAP rate of 9.4 dB/dd gives an attenuation of 18.6 dB from 152 m to 600 m. So the BAP RNL of 60 dB L_{Amax} at 600 m would result from 60 + 18.6 = 78.6 dB L_{Amax} or about 76.6 dB L_{Aeq} at 152 m radius. This level is 10.9 to 15.4 lower than mentioned in paragraph 1.2 above as derived from the engine at full power measurement chart.

1.5 My report Figure B.6c) BAP single shows for full power BAe 146 ground running on all four engines a level of 68 dB LAeq at the peak directional angle (120°) at 600 m distance. Since the original measurements were made at only 25 m radius (but the extrapolations to 600 m made at the above mentioned 9.2 to 9.4 dB/dd) the aircraft fuselage effectively shielded two of the engines (symmetrical directionality in Figure B.6a) compared to the lop sided single engined run in the BP chart). As I pointed out at the meeting the equivalent single engine result should be obtained by subtracting only 3 dB from my results, ie 65 dB LAeq when extrapolated to 600 m. Adding 2 dB to get the L_{Amax} values reported as RNLs by BAP gives about 67 dB L_{Amax} at 600 m for a single engine at full power compared to only 60 dB assumed by BAP, ie the BAP assumption is 7 dB lower.

1.6 Thus, depending on which set of measurements is used as a starting point, the BAP assumed RNL for a single engine at full power measured at the peak directional angle at 600 m radius is somewhere in the range 7 to 15 dB too low.

1.7 His extrapolations to get instantaneous L_{Amax} values at the edges and typical positions of the two sites is arithmetically correct for his RNL assumptions.

1.8 Likewise his adjustments by 8 dB downwards to get a value for the one hour noise exposure level $L_{Aeq,1h}$ from the levels for a 10 minute engine run are correct, although he should actually reduce it by another 2 dB because of the above mentioned difference between L_{Amax} and L_{Aeq}. Thus his values for full power should be 43, 36, 32 and 27 dB $L_{Aeq,1h}$ respectively.

I cannot agree with the use of ground running criterion levels unrelated to the background noise level, despite this being adopted at Plymouth (also at the London Heathrow Airport). There are considerable numbers of dwellings quite close to the ground running locations at Plymouth and at LHR in an urban situation where the ambient noise level is already quite high. This is not the case anywhere around Exeter Airport at the moment (save on the edges of Exeter City itself). I therefore place more reliance on his tests

against the background noise levels (ie in keeping with the practice at Birmingham) and certainly not on what is claimed in BAP report Table 1, namely 55 dB $L_{Aeq,T}$ as being common UK practice.

Looking now at his tests against the background levels (noting that he cites correctly the 40, 30 and 35 dB L_{A90} values for Daytime, Middle of Night and Early Morning which we agreed at the meeting):

For Daytime, adding the above mentioned 7 to 15 dB shortfall and allowing for $L_{Amax} - L_{Aeq}$, we should get, for full power with one engine the following L_{Aeq} values:

Situation	Criterion	Clyst Hayes		Southbrook	
		Edge	Typical	Edge	Typical
Daytime $L_{Aeq,1h}$	40 dB	50 to 58	43 to 51	39 to 47	34 to 42
Early am $L_{Aeq,5m}$	35 dB	58 to 66	51 to 59	47 to 55	42 to 50

Remember that, after adding 5 dB for noise character and setting the criterion at 5 dB above background level for likelihood of complaints, any situation with a predicted level above the criterion background level is likely to prove unacceptable (see my report Appendix C paragraphs C.3.3 to C.3.5 on page C.14).

Thus, because of the understatement of RNLs by BAP, it is likely that ground running noise levels would be unacceptably high at Clyst Hayes and Southbrook at any time other than in the daytime and that in the daytime they would be unacceptable at Clyst Hayes and at Southbrook too if the BAP ground testing measurement chart data is assume correct.

2. Flight Noise

2.1 Regarding BAP Table 1, whilst 60 dB $L_{Aeq,16h}$ is the highest acceptable for new dwellings daytime, PPG 24 makes it clear that 57 dB should be the normally adopted criterion.

2.2 He makes no reference at all to the overriding criterion for night-time noise that there should not be more than 82 dB $L_{Amax,S}$ from flight events several times in any hour (my report Appendix C paragraph C.1.19 on page C.4). Notwithstanding the fact that the contour (green, my report Figure 10) just avoids Clyst Hayes, the BAP assessment should show that it has been considered and that the Southbrook site is similarly disposed to it

2.3 Both Clyst Hayes and Southbrook will be subject to GA movements under the circuit patterns. The BAP assessment make no mention of this, though it was discussed at the meeting.

THB/KJR/E18/L6/19
JGC/LK/A5441 (W5)
23 March 2001

Mr T H Bolshaw
Principal Planning Officer
Devon District Council
Council Offices
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Devon EX10 8HL

Dear Mr Bolshaw,

EAST DEVON DISTRICT LOCAL PLAN
DEVELOPMENT AROUND EXETER AIRPORT
INDEPENDENT APPRAISAL OF IMPACT OF EXETER AIPORT NOISE: COMMENTS MADE BY BRITISH EUROPEAN AND EXETER INTERNATIONAL AIRPORT

Thank you for your letter of 20th March 2001, and the interesting replies from the Managing Directors of the Airport and British European. I give my initial observations below in the first instance separately related to their individual letters.

British European 12th March 2001

I am pleased that British European agree with my advice, section 3.3 'Unresolved Issues', that to resolve engine ground running noise matters it is necessary for provision of detailed forecasts of future testing, and in particular night-time tests. I sought this information during my initial involvement in my work for you, and still are not in receipt of such projections.

Mr Thomas criticises my adoption of a simple approach on engine test evaluation, in my case I deliberately tried to meet my brief which was to produce readily understandable advice. I did not choose to produce volumes of information as Heathrow T5. I hope I was correct in my interpretation of my brief.

I appreciate his concerns over his proposed expansion of maintenance facilities, however I would point out that in modern environmentally sensitive Europe noise emitters are not usually allowed to sterilise large areas of land from other development, especially when planning permission for their development has not been obtained. I also have the problem that I have been unable to discover or

document significant community impact from the area around the Airport (which is clearly not currently unpopulated) despite his current work in maintaining 100 aircraft.

I suggest the Council should accept his offer in the last sentence of his letter, and seek from him a schedule of current and future engine tests related to his maintenance work. I enclose an example of such a schedule, and the related background information provided by another major maintenance operator when seeking permission for a new facility. Even with that facility, no engine ground runs during night-time hours 23.00-06.00 were sought, and I am aware from discussion with the planning authority would have been given.

Exeter International Airport

I note that Michael House, the noise adviser has raised many detailed criticisms, however I note that with regard to airborne aircraft noise and ground operation noise (excluding maintenance runs) no disagreement is given to my initial conclusion.

With regard to maintenance noise both Mr House and Mr Myers seek to criticise my simplified approach. I find one of the reported criticisms most inappropriate, that I am criticised for not contacting British European directly to examine their records on engine runs.

The reason I indicate this as inappropriate, is that:

(a) I wrote on the 1st November 2000 directly to the Airports' noise consultant and asked for detailed on ground runs at the Airport.

(b) I was advised by receipt of a copy of a letter of 10th November 2000 from Mr Myers to Mr Maidment that he would reply to the matters raised in my letter of 1st November 2000 to Mr House.

(c) I spoke to Clare Rodway of your Authority over the level of engine test complaints, and was advised of only two in the last few years.

(d) I then issued a letter setting up a joint meeting of the noise experts at the Airport, which included on the agenda Ground Engine Testing.

(e) I received a copy letter from Mr Myers to Mr Maidment dated 21st November 2000, in which it stated, "British European Aviation Group Services have been contacted to provide data on current ground tests at the airport".

(f) I attended the joint meeting with the noise advisers on the 29th November at the Airport, this was attended by Mike House, Vernon Cole, Bill Stubbs and Mike Foster for the Airport. The matter of engine testing was discussed and Mike Foster asked for details of noise complaint log.

(g) I wrote directly to Geoff Myers on the 30th November thanking him for hosting the noise experts' meeting, and chasing the promised information from British European.

(h) I received an e-mail from Mike Foster on the 12th December, copy enclosed, advising that "we have not been successful in obtaining specific log details from British European regarding ground running, they have gone back over their workshop logs and it would appear that ground running during the hours of 11.00 to 06.00 occurs about once a week".

At no stage did the Airport indicate that I should direct my enquiries directly to their customer, British European, and so I relied on the Airport to obtain the relevant information.

(i) I note in the Airport's own definitive report, that produced by Mike House of 31st October 1999, no information is given on the number, timing of engine runs related to maintenance. I note also in that report that no effect is made for the influence of prevailing winds.

I was pleased to note that the Airport suggest, as I did, that the way forward is to establish British European's proposed plans. They also suggest undertaking further noise measurements related to engine ground running. I recollect that one of the residential developers has already sought to do measurements with the Airport, and in the past they were abated at instruction of the Airport.

I do not find any of the points raised in these two letters change my initial advice. I do suggest that, as originally advised the noise matter of engine ground running noise should be resolved by provision of detailed forecasts of future testing, and in particular night-time tests. I am pleased that British European appear prepared to provide the missing data, and I suggest the Council seeks such. To ensure the data is adequate I would be pleased to meet with British European or discuss it with them by telephone.

I hope these observations are sufficient for your next meeting. Unless you advise to the contrary I will not respond to the comments made by Mike House at this stage.

Yours sincerely,

Jeff. G. Charles
for Bickerdike Allen Partners

Enc: BIA Papers

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16 May 2001

Mr Jeff Charles
Bickerdike Allen Partnership
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Dear Jeff

EDDC: EXETER AIRPORT NOISE REPORT

Thank you for sending a copy of your EDDC Noise Appraisal report dated February 2001.

I believe that the report is clear and concise and presents a fair appraisal of the airport noise issues as they affect either of the proposed sites for the new community in East Devon. In your cover letter, you gave us the opportunity to comment on your findings so that you can take account of relevant input from all parties prior to submitting your final report. Inevitably my comments deal mainly with the issue of ground running/engine test noise, as I believe the position is quite unequivocal in respect of normal operational noise both from airborne and ground based aircraft. For such activity noise is not a factor nor is likely to be in the future for any reasonable expectation of aircraft traffic at Exeter Airport.

Regarding ground running/engine test noise I firstly make one or two points regarding the approximate analysis as summarised Table 2 of your report and secondly give my thoughts on how one should determine a suitable threshold for this type of noise emission. I conclude this letter by making some comment about the responsibilities of the Airport in terms of the noise it generates.

Table 2

1. Your reference noise levels match what we have used for the BAe146, and I believe that you are using an attenuation rate of around 9.5dB per doubling of distance. This is close to what the INM uses, although we have discussed whether an attenuation rate of 12dB per doubling of distance is more relevant for this type of environment. It is hoped that we can resolve this question during the engine ground noise tests planned for the near future.

2. The assumption that the engine test last for 10 minutes is consistent with one we have made in the past in order to be conservative, although there is a question over whether the engines are ever actually run at full power for this length of time. 10 minutes is a long time, and I am sure that BEA or any other maintenance company would not expend the fuel or run the engines to any greater degree than is absolutely necessary. It

is hoped that BEA will be able to advise on this issue in some detail, and that records of their recent testing are available and can shed light on this important issue.

3. You calculate the 1 hour L_{Aeq} values for the engine testing and present the values in the context of an acceptable daily environmental noise level given as a 16 hour L_{Aeq} value. I would propose that a suitable way of making the comparison by reference to the same time period would be to convert the engine test noise to a 16 hour L_{Aeq}, while factoring the number of tests which are likely to occur during that period. This would be a useful way of looking at the aggregate effects of engine noise in the situation where a number of different aircraft are tested in any particular period.

4. I note that you look at night time testing in two different ways, and find that there is a marginal risk of complaints if one uses the BS4142 approach. We are not convinced that this is an appropriate basis on which to assess ground running noise, and have previously made the following points:

   - Night testing is very much the exception rather than the rule as indicated by the Code of Practice for ground running at night. It should only take place in the event of an operational emergency whereby an aircraft must be tested prior to departure at an early hour. BS4142 deals with industrial noise and its effects on nearby residences, and such noise is by its very definition a regular and normally continuous feature of the noise character in an affected location.

   - Any assessment of night ground running by reference to BS4142 suggests an impact and a likely level of complaints which is simply not borne out by the records. You make this point yourself in the report, and we believe this anomaly is fundamentally due to the unreliability of using BS4142 in this context.

I am sure the above points will be fairly covered in our forthcoming discussions.

Ground Running Noise Threshold

As you note in your report, there are no agreed noise impact assessment methods for this activity. Getting consensus between the interested parties on this point would be a significant step forward in the consultation process.

For our part, we would see the following as being very important issues to take into account when analysing the effects of ground running noise and developing a suitable assessment threshold:

1. The frequency and duration of engine tests. If tests are carried out many times per day, then one would expect noise at a given level to have a greater effect than if only one test is carried out per day or every few days. Particularly in the case of night time testing the infrequent nature of these events must be taken into account.

2. The types of aircraft to be tested, and the mix of such aircraft in the normal course of a testing period. Some aircraft engines are clearly noisier than others, but may only be tested very occasionally or make up a small percentage of the total tests. The assessment threshold should take account of this, and one way would be to aggregate

the effects of all tests expected over a given period, very much as the airborne aircraft noise model works when generating L_{Aeq} contours for typical days or typical nights.

3. There may be a case for considering absolute thresholds for ground running noise to take account of issues such as the need to avoid undue sleep disturbance. I would see these kicking in only if the number of expected night time tests is high enough to be of significance.

4. The context of tests being undertaken within the boundaries of a working airport needs to be given due weight. As you note in your report the projected number of aircraft movements are 80 per day and 4 per night for the summer season in the year 2011, and these numbers are not significantly greater than take place at present. Put another way, take offs are expected to number 40 per day and 2 per night, and for each of these all the aircraft engines are run up to full power at the beginning of and during take off. The aggregate noise effect of these is shown to be far below the relevant assessment threshold at either of the proposed communities: you make the point yourself that the number of these activities could more than double, and still the noise effects would be far short of significant. Engines under test generate noise levels no higher than those caused by aircraft taking off: only the duration of the noise is different (and this is yet to be properly quantified).

On the crucial issue of the numerical value of thresholds there will no doubt be on going debate. We offer our preliminary thoughts as follows:

Daytime
55dB $L_{Aeq,16h}$ would be a sensible threshold in that it takes account of:

a) the number of events within the normal daytime period,

b) the mix of aircraft which would need to be tested in a given period,

c) the maximum noise level and the duration of each run,

d) the quite stringent Birmingham International standard of +5dB above the ambient, given that the prevailing ambient in this area is around 50dB $L_{Aeq,16h}$.

Night time
65dB L_{Amax} would be a sensible starting point, as the relative infrequency of night time testing suggests that looking at long term aggregate effects may not be totally relevant. (Indeed, if night time testing is properly controlled by the Airport's Code of Practice there may even be an argument for not needing a night time assessment threshold.) We would add that this threshold should strictly speaking only be applied to aircraft which are operational from the Airport, as there can be no justification for night time testing of aircraft which are brought in purely for routine maintenance.

Onus on the Airport
The focus of attention in the debate at the present time is on the suitability of the alternative new community given the effect of the noise generated by the Airport. However, we should not lose sight of the fact that it is the Airport which generates the noise and which therefore has some responsibility for controlling it or mitigating the effects. You make the very valid point in your report that there are number of existing communities affected by noise from

the Airport and this will continue to be the case irrespective of whether or where a new community is developed. At the existing communities residential development is on going.

It is significant that the recent DETR press statement (News Release 269: 8 May 2001) announces a new study into aircraft noise, and in it the Aviation Minister Bob Ainsworth states, among other things:

> "We want the aviation industry to meet the external costs it imposes."

So far, this issue seems to have been ignored by the Airport, as at no stage have they made any statement or commitment concerning control or limitation of the noise their business generates. The balanced view dictates that no new development can unfairly constrain the operation of the Airport, but by the same token the Airport cannot act or operate with impunity such that existing communities are unfairly exposed to ever increasing noise, and large areas of countryside are blighted in terms of future development.

It is therefore hoped that during our on-going debate with the Airport and its operators, we get sensible feedback on the following points:

1. Any projections made by BEA or the Airport on the likely frequency of future testing will need to be realistic and based on the recorded history of such testing.

2. The types of aircraft which are indicated as being the subject of future tests will likewise need to be founded on realistic projections and business aspirations.

3. If a significant development such as a new hanger is to go ahead in the south east corner of the airport, and this will lead to an increase in maintenance activity and engine testing, what are the environmental impacts envisaged by the Airport? Equally importantly what do they propose to do to mitigate any significant effects?

I am sorry if this has been a little long winded, but hope the contents are clear. Please contact me if you have any questions there is any further information I can provide at this time.

Yours sincerely

Vernon

Vernon Cole
Cole Jarman Associates

cc. R Brewer: Wilcon Homes
N Duckworth: Hallam Land
N Freer: David Lock Associates

Our ref: EPN8820M
Client ref:

Date: 4 June 2001

Jeff Charles
Bickerdike Allen Partners
121 Salusbury Road
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WIMTEC ENVIRONMENTAL

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Dear Jeff

SOUTHBROOK – NOISE

Following our meeting at Exeter on 1 June 2001, I said I would respond to your request for comments on your report in your letter of 3 May 2001.

I cannot understand how you can conclude that the relative advantage of Southbrook over Clyst Hayes is small when you have calculated that there is a difference of 11 dB in the exposure to noise from engine running. This difference does not take account of the screening by ground topography, which gives a further benefit for Southbrook.

Even though my reports have referred to the need to take account of future noisier aircraft types, you did not take this into account and your report appears to try to minimise the impact of noise from ground engine running. My report of June 2000 gives noise contours for an RB 211 engine based on data supplied by Boeing and agreed by all parties at the Heathrow Terminal 5 Inquiry. There is around a 10 dB increase in engine running noise for the RB 211 compared with the quiet types assumed so far.

You have not adopted the need to use the most stringent noise criteria for planning a new settlement next to an airport. We only have airport operations forecast for the next 10 years and as explained by John Maidment of East Devon, the houses will be there for much longer.

Some of your apparent doubts may be resolved by the forthcoming tests but I would submit that it is obvious by looking at a map showing the airport and the 2 sites that the Southbrook site has a clear advantage in noise terms, not just for engine running, but for the other multiple noise sources affecting the Clyst Hayes site.

Yours sincerely,

W Stubbs
Principal Acoustic Consultant

c.c. East Devon District Council – T Bolshaw, J Maidment

This matter is being dealt with by our South East office at St Peter's House, 6 – 8 High Street, Iver, Buckinghamshire, SL0 9NG.

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Your ref EPN8820M
Our ref JGC/LK/A5441 (Wim3)
date 05 June 2001

BY FAX: 01753 792321 ✓

Mr Bill Stubbs
Wimtec Environmental Ltd
St Peter's House
6-8 High Street
Iver
Bucks SLO 9NG

Dear Bill

EXETER INTERNATIONAL AIRPORT
EGR NOISE

Thank you for your letter of 4th June and your detailed points on my first report to the Council. I will try to address your points in my second report which will be prepared after the planned noise tests on the CRJ and Dash 8 aircraft. My initial responses to your concerns are briefly noted below.

Relative Advantage of Southbrook over Clyst Hayes

As noted in my initial report, "as both sites have been found suitable" any relative advantage is small in noise terms. That is the numerical difference in level of projected engine test noise between the sites is not of great consequence if both sites do not suffer problematic engine test noise.

Future Aircraft Engine Ground Test Noise

My difficulty for my Client is over the likelihood of much larger aircraft carrying out engine ground runs at night at Exeter. As you will have heard from Rob Thomas the possibility of larger aircraft is an aim, but no such testing is currently carried out. This leaves us in a difficult situation with how to assess it. Considering Southbrook and the information given in Figure 6 to your June 2000 report, I note you expect levels of up to 50 dB(A) on your site. In light of your recommendation over the use of Mike House's BS 4142 approach, and adoption of a background noise of 35 dB(A), this would indicate parts of your site would be unacceptable for residential use. On the basis of your 55 dB L_{Amax} criterion, Figure 6 suggests all your site would be OK for the Boeing 757. I, as you know from my telephone call, am confused by your apparent recommendation of two conflicting noise assessment methods. I would welcome your further advice on whether you wish us to rely on Figure 6, and the

appropriate criteria in your view. I apologise for repeating my request over criteria, but I seek your help so I can fairly report matters to my Client.

BAP's Initial Report

As you will appreciate the new tests will provide only information on the CRJ and Dash 8, I will need to rely on other information for the BAe 146 and F27. Please could you advise whether you agree with the results given in Mike House's report, Figure B6a, Figure B6b, Figure B6c, Figure B7a, Figure B7b, Figure B7c. I refer particularly to the measured values at 25m, as clearly the proposed tests may give more local information on sound propagation.

I also await your comments on our technical note issued at the recent meeting on INM predictions for other aircraft.

Proposed Noise Tests

I am awaiting advice from Rob Thomas on the night for the tests and will advise a s a p.

In the meantime I am trying to resolve all the noise monitoring sites, and seek whether you have any more detailed advice on the actual location for your monitor S2 near Southbrook. On my return to my office I also considered again your monitor location S1 with reference to the Land Use plan from Jon Rowland you issued to me some time back. That indicates housing to the edge of the site near Jack-in-the-Green. 250m closer to the engine test location and less shielded by local topography. Do you think to thoroughly check out your site we should measure close to the old A30, i.e. at the location where your Figure 6 predicts the highest level of ground noise?

Best wishes,

Yours sincerely,

P.P. **Jeff. G. Charles**
for Bickerdike Allen Partners

c.c. John Maidment

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Facsimile Message

NATIONAL BRITANNIA

Safety, Health and Environmental
Risk Management Solutions
Worldwide

To	Jeff Charles
Company	Bickerdike Allen
Fax No	0207 625 0250
Date	11 June 2001
From	Bill Stubbs (Direct Tel: 01753 792326)

Message SOUTHBROOK

Further to my fax of 6 June 2001 and your email of 6 June, I have considered your letter/fax reference wim3 of 5 June 2001, and my response is given below:

1.
Your second paragraph depends on your assumption that "both sites do not suffer problematic engine testing" and this is in conflict with later statements in your letter regarding noise impact of engine testing.
The facts are quite clear: engine testing noise is an issue, reasonable noise criteria will be exceeded for Clyst Hayes, and Southbrook is exposed to significantly lower noise levels which are 11 dB less even without allowing for the barrier effect which results from the Southbrook site being on the far side of a large hill from the airport..
I would estimate that there is at least a 20 dB difference in engine testing noise exposures for the 2 sites.

2.
The subject of future aircraft types is now being dealt with. You refer to my own RB211 contours and once again, I remind you that the contours do not take account of topographic shielding which must have been apparent to you on your recent site visit. I have provided you with a full explanation of criteria in my fax of 6 June. (On the subject of other aircraft types, yo B737-300 at full thrust is 93 to 99 dB at 120/135 degrees compared with your 92 dB at 90 degrees.)

3.
You ask about noise measurements on BAe 146 and F27 aircraft presented by Mike House in his report, and I have no reason to doubt the data.

4.
My suggested noise monitoring positions were chosen to avoid extraneous noise from road traffic and to be representative of the proposed residential areas.

I hope that you will now be able to have all the information at your disposal to give clear advice to your client concerning the relative merits of each site.

BILL STUBBS

If any part of this transmission is unclear please telephone 01753 737744

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11 June 2001

Mr Jeff Charles
Bickerdike Allen Partnership
121 Salusbury Road
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Dear Jeff

EXETER AIRPORT
ENGINE GROUND RUNNING NOISE

Thank you for your letter dated 5th June.

I have looked at the source data for ground running noise of the various aircraft, both jet and turbo prop, as set out in your Note 2 (A5441) distributed at the noise advisors meeting on 1st June. I have also looked at the noise emission issue by running the current version of INM (6.0b) for various aircraft types and can say that I generally agree with your ground running data within a reasonable accuracy range.

From my own investigation, I conclude the following:

Aircraft	Equivalent "Full" Power Thrust	"Full" Power Noise Level @ 152m
BAe146	5,000lb	87dB
B757 RR	34,400lb	90dB
CRJ (CL601)	6,500lb	85dB
Fokker F27	100%	85dB (1)
Dash 8	100%	« 80dB (2)

(1) Both engines running
(2) Probably in the order of 70dB with both engines running.

Given that there is always some element of trial and error in these matters and that we are within 1dB of each other's figures, I am happy to accept your own.

Yours sincerely

Vernon

Vernon Cole
Cole Jarman Associates

cc R Brewer: Wilcon Homes
N Duckworth: Hallam Land

Cert. No. 94/3270

British European

part of Walker Aviation

Aviation Services Division

22 June 2001

Mr J Maidment
East Devon District Council
Council Offices
Knowle
Sidmouth
Devon
EX10 8HL

Our Ref: GH/jt

Your Ref: JFM/JH/E18

Dear Mr Maidment

Exeter Airport - Noise Tests

I refer to your letter dated 19 June addressed to our Managing Director Mr Rob Thomas.

Over the last year we had roughly 200 scheduled inputs of which 90% required high power ground running both before and after maintenance. High proportions of these ground runs were carried out between the hours of 1800 - 2300, around 4 per week.

Ad hoc inputs i.e. defect rectification and engine charges, which are over and above the scheduled inputs require engine runs also. These account for around 3 per month of which possibly up to 2 could run into the early hours of the morning due to the requirements to go back into service the next morning, taking into account our code of conduct with the airport.

This information is typical for our operation at present, but changes from year to year depending on customers and length of inputs.

I hope this is useful to you, please do not hesitate to contact me if you need any more information or help in any way with your programme.

Yours faithfully

Gary Holley
CHIEF ENGINEER

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EAST DEVON DISTRICT LOCAL PLAN
NOISE IMPACT APPRAISAL/EXETER AIRPORT
(A5441/R2)
NOTES OF MEETING OF NOISE ADVISORS
WITH RESPECT TO NOISE OF ENGINE TESTING
AT EXETER INTERNATIONAL AIRPORT

APPENDIX 2

- Working Copy of Notes, including without modification alterations/additions suggested by I Wollacott, V Cole, W Stubbs.

- BAP Note 02: Ground Running Noise Assessment Small and Medium Aircraft, ref: A5441/DC/NO2.