ENVIRONMENTAL NOISE ASSESSMENT
FILLING LINE EXTENSION PROJECT
GLAXOSMITHKLINE
WORTHING

INVC IN CONFIDENCE
This is a document prepared for the client by **INVC**. Recipients may not pass this document to any person outside the client's business without written consent from the **INVC**.

Neither **INVC**, nor any person acting on its behalf, makes any warranty, express or implied with respect to the use of any information, method or process disclosed in this document or that such use may not infringe the rights of any third party or assumes any liabilities with respect to the use of, or for damages resulting in any way from the use of any information, apparatus, method or process disclosed in the document.

© INVC 2011
All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means electronic, mechanical, photocopying, recording or otherwise without the written permission of the **Industrial Noise & Vibration Centre Limited**, 889 Plymouth Road, Slough, Berkshire, SL1 4LP. Registered in England No 1981938.

COMMERCIALLY CONFIDENTIAL

INDUSTRIAL NOISE & VIBRATION CENTRE LIMITED

Author : S Ellis Report No : 6764

Date : 21 June 2011

ENVIRONMENTAL NOISE ASSESSMENT

FILLING LINE EXTENSION PROJECT

GLAXOSMITHKLINE, WORTHING

1.0 INTRODUCTION

The **Industrial Noise & Vibration Centre Limited (INVC)** was requested by GlaxoSmithKline (GSK), Worthing to undertake an environmental noise assessment of the proposed filling line extension project.

This report gives the results of the calculations undertaken and considers the results, having regard to existing noise levels on the boundary of the site.

2.0 NOISE CALCULATIONS AND DISCUSSION

Figure 1 shows the approximate location of the filling line extension in relation to the site boundary, closest to existing residential properties.



Figure 1

Figure 2 shows the general layout of the filling line.

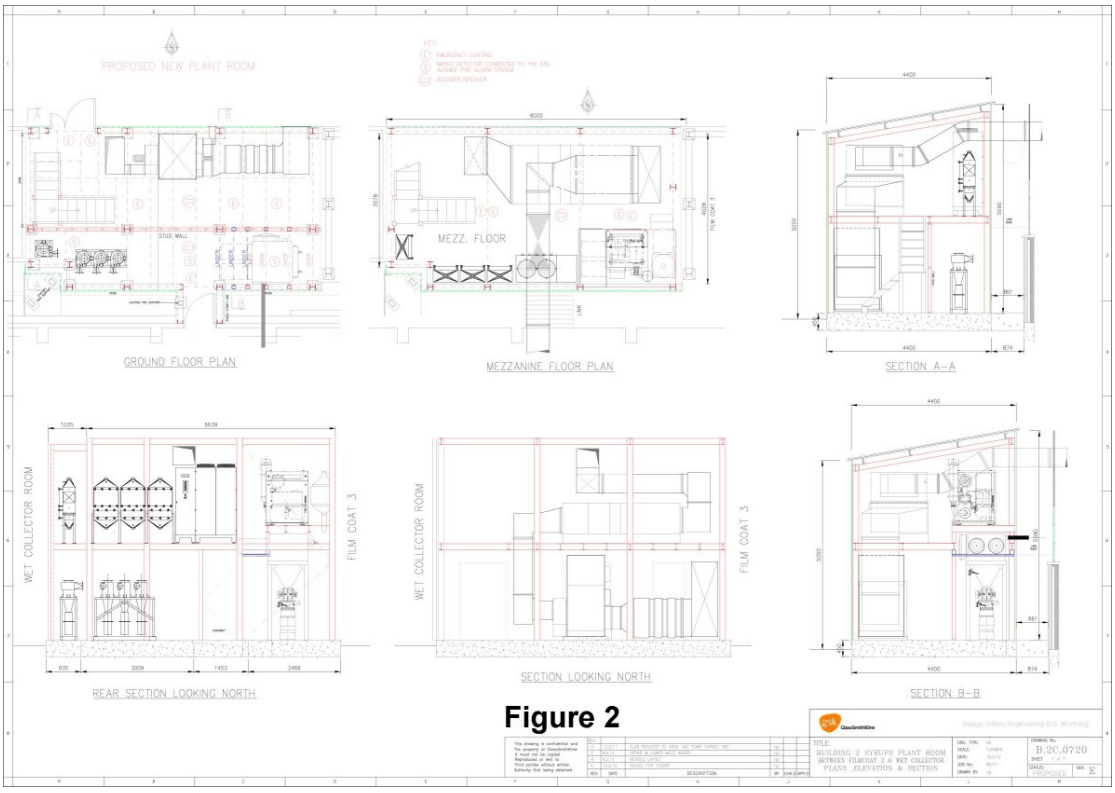


Figure 2

Figures 3, 4, 5 and 6 show the items of equipment that will be installed within the building that is to be placed on the façade on the existing building as shown on Figure 1.

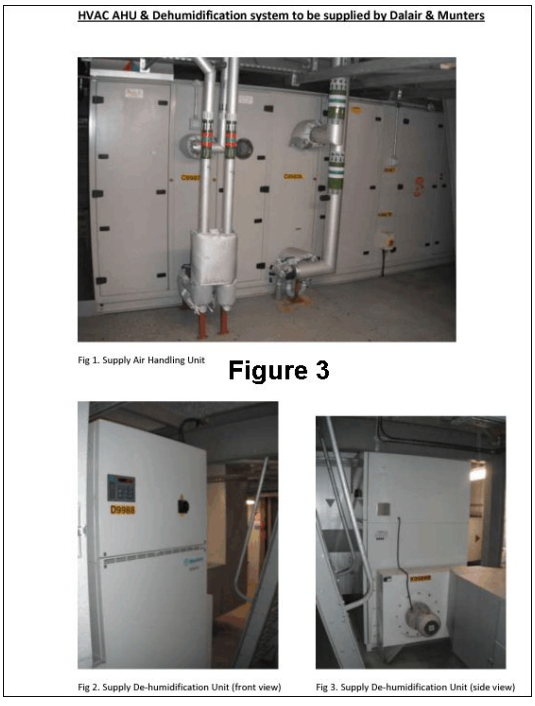


Figure 3

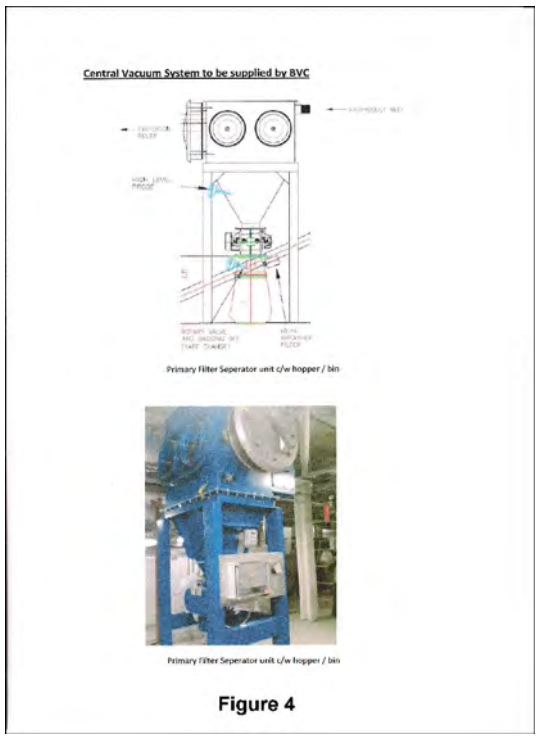


Figure 4

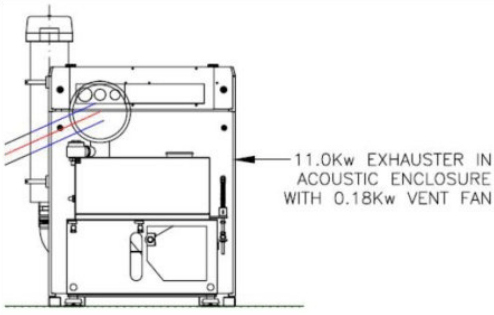


Fig 3. Vacuum Exhauster Unit **Figure 5**

The following noise levels have been used for the items of equipment shown:

	dB(A) at 1m
HVAC AHU and dehumidification system	84 *
Central vacuum system	76 **
LEV cyclone x 4	86 **
Total noise level inside building	**88**

* Based on actual noise measurements

** Supplied by manufacturer



The following areas have been used in the calculations for the building:

Front wall	37.03m^2			Door	2.88m^2
Side walls	49.19m^2			Louvre	0.49m^2
		Roof	32.22m^2		

In order to calculate the noise level on the site boundary, the following formula has been reference from Acoustics, Noise and Building, P H Parkin, H R Humphreys and J R Cowell, fourth edition.

For indoors to outdoors calculations the general form of the equation is:

$$L_2 = L_1 - SRI + 10\log S - 20\log r - 14 \text{ dB}$$

where L_1 is the average level in the reverberant room (88 dB(A))
L_2 is the level at a distance r r = 15m
S is the area of the partition
SRI sound reduction of the panels

However, in order to predict a worst case noise level, a term of +10logQ has been added, where Q = 4 for a wall and Q = 2 for a roof. This gives –11 dB for a wall and –14 dB for a roof as the last value in the equation given above.

where SRI (R_w)	for wall panels	=	40 dB
	roof	=	24 dB
	door	=	24 dB
	louvre	=	22 dB

It is proposed that the wall will be

19/1000 liner

120mm rock mineral wool 23 kg/m^3

32/1000 outer

shown on Figure 7:

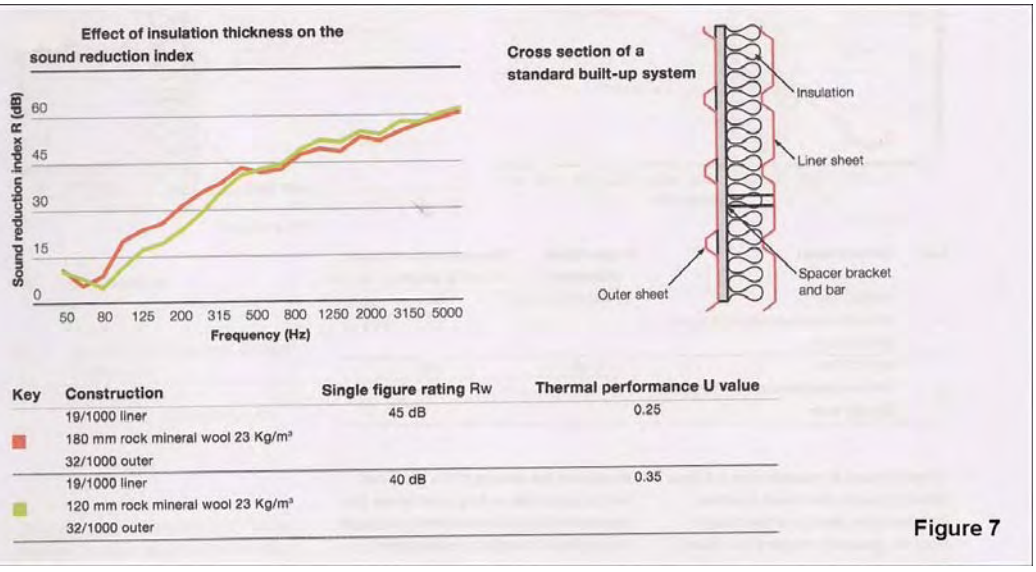


Figure 7

The roof is 32/1000 shown on Figure 8:

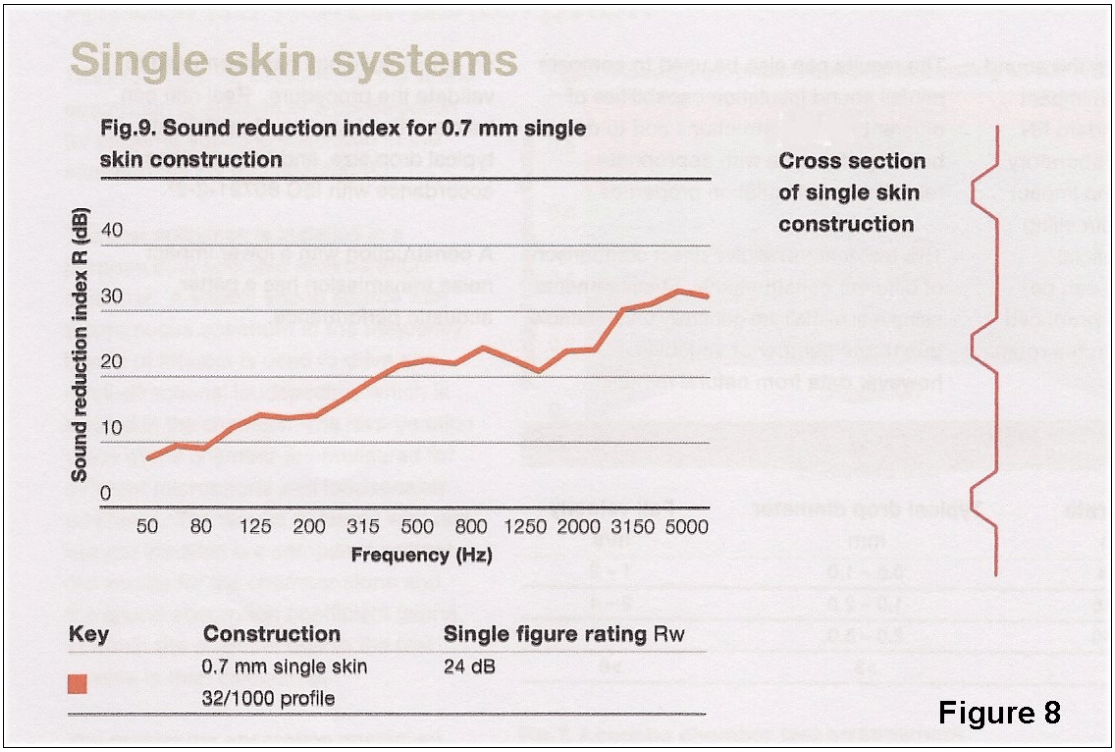


Figure 8

Given the above, the calculated noise level at the site boundary will be 43 dB(A).

Based on noise measurements undertaken by **INVC** in May 2011, it is known that the background level in the area of the site boundary is 55 dB $L_{A90\ (5\ mins)}$ with an attendant ambient noise level ranging from 56 to 57 $L_{Aeq\ (5\ mins)}$.

This means that with the proposed construction, the noise levels from the filling line extension will be more than 10 dB(A) below the background noise level and hence will not increase the existing levels.

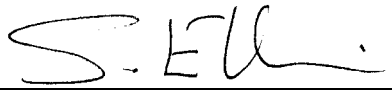
In accordance with British Standard BS 4142 "Method for rating industrial noise affecting mixed residential and industrial areas" the background level is 55 dB(A), the specific noise level is 43 dB(A), and as a worst case an acoustic feature correction of +5 dB has been added, this gives a rating level of 48 – 55 dB(A) = –7 dB(A). This would indicate that complaints are unlikely and if the 5 dB acoustic feature is not included, as would be more likely, then this is a positive indication that complaints are unlikely.

In addition, it is understood that a "wet" fan which is located on the façade of the building within a small building is to be removed. Given that this produces 94 dB(A) at 1m, then a reduction in the overall site boundary noise level can be expected.

3.0 CONCLUSIONS

The proposed filling line extension will not increase noise levels on the site boundary and with the removal of the "wet" fan, an overall noise reduction can be expected as a consequence of this work.

In accordance with BS 4142, *"complaints are unlikely"* to *"a positive indication that complaints are unlikely"*, given a rating level of –7 dB / –12 dB. The assumptions in this report are worst case and the actual noise levels are likely to be lower than those predicted.

Author 

S ELLIS