

Memo

To:	Chris Dodds Senior Land Manager Gleeson
From:	Louise Alderson Environmental Consultant L A Environmental Ltd
cc:	
Date:	May 19, 2015
Re:	Tharsus Site Glen Street Hebburn ST/0126/15/FUL

Comments were received from the Council's Environmental Protection Section with regards to noise assessment GH/GS/001 dated February 2015 in an email from Christina Snowdon, Senior Planner at South Tyneside Council to Chris Dodds on 2nd April 2015. Each issue is numbered below with comments afterwards.

- Plot numbers 18 and 19 are to be located extremely close to the metro line. From the layout drawing (GH44:L:01) it would appear that the side elevation of plot 18 would be approximately 2 metres from the boundary with the metro line and 6 metres from the metro track itself, and part of the side elevation of plot 19 would be within 2 metres boundary with the metro line and approximately 5 metres from the metro track itself. This is well within 20 metres, which is the minimal separation distance the Council would recommend for developments of this nature. (A 20 metres separation distance has been incorporated into several similar developments within the Hebburn area.)

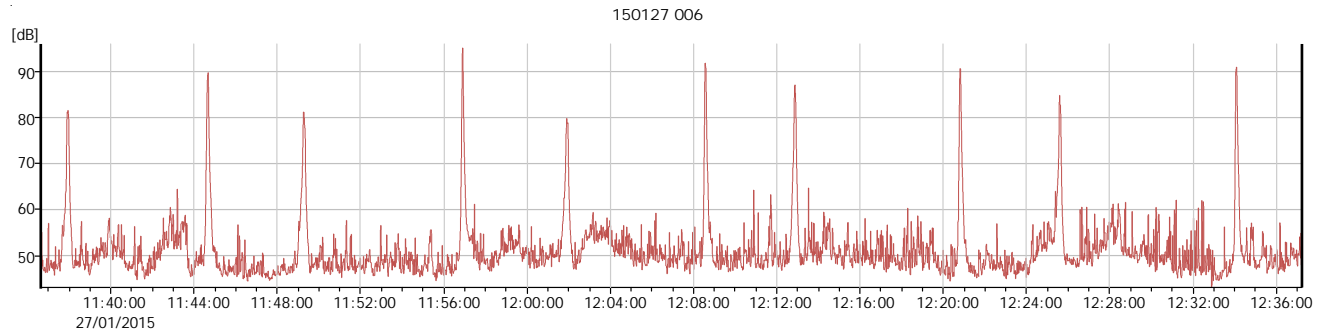
Response:

The distances stated above are to the nearest façades which do not have any habitable windows. The distances to the nearest habitable windows will be greater and noise levels will be reduced as a result of the building itself providing a further 3dB(A) reduction as a result of reducing the line of sight from the metro track. It has been demonstrated that internal levels can achieve recommended guide values with appropriate noise control measures.

- Based on the figures provided in the noise assessment, Metro pass-bys reach an L_{max} of 95db at the noise measuring location 2 which is located in close proximity to the location of plots 18 & 19. Even taking into account the mitigation methods put forward in the assessment, this noise level, which will be reached 8 times between the hours of 23:00 and 07:00, would likely have a serious impact on the amenity of future residents of the two properties. These L_{max} figures are in excess of those recommended in the WHO guidelines for community noise. The location of these two properties so close to the metro line would therefore be contrary to Policy DM1 of the Local Development Framework and would not be supported.

Response:

There are 8 metro trains scheduled in each direction between 23:00 and 07:00 which is classed as night time. Not all trains passing Location 2 (Plots 18 & 19) reach an L_{Amax} of 95dB(A). The graph below show the maximum noise levels measured over a one hour daytime period and shows 10 train pass-bys.



The above peaks correspond to the following metro train pass-bys:

Time	Maximum noise level dBL _{Amax}	Direction of travel
11:37	81.6	Eastbound
11:44	89.8	Westbound
11:49	81.2	Eastbound
11:56	95.1	Westbound
12:01	79.8	Eastbound
12:08	91.1	Westbound
12:12	87.1	Eastbound
12:20	90.7	Westbound
12:25	84.8	Eastbound
12:34	90.6	Westbound

The two highlighted rows are the highest noise levels in each direction and demonstrate that metro trains on the furthest line i.e eastbound track produces noise levels 8dB(A) lower than on the westbound track.

It has been demonstrated, from the daytime measurements, that the closest metro trains, i.e. on the westbound track reach a maximum level of 95dB(A). The metro trains on the eastbound track, approaching Platform 1, cause the L_{Amax} to reach 87dB(A)

The following table details the times at which metro trains pass the site.

Time	23:00 – 00:00	00:00 - 01:00	01:00 - 02:00	02:00 - 03:00	03:00 - 04:00	04:00 - 05:00	05:00 - 06:00	06:00 - 07:00	Measured daytime L _{max} level dB(A)
Hebburn to South Shields (Eastbound)	23:09 23:24 23:39	No service	No service	No service	No service	No service	05:27	06:04 06:22 06:34 06:47	87
Hebburn to St James (Westbound)	23:09 23:24 23:39 23:54	00:08	No service	No service	No service	No service	05:58	06:34 06:53	95

The WHO Guidelines state that:

“For a good sleep, it is believed that indoor sound pressure levels should not exceed approximately 45 dB LAmax more than 10–15 times per night (Vallet & Vernet 1991),”

If it is assumed that maximum levels during the night are the same as during the day then to achieve internal levels of 45dB_{L_{Amax}} or below would require the eastbound trains to be attenuated by 42dB(A) and the westbound trains to be mitigated by up to 50dB(A).

If half of the maximum levels caused by passing trains could be mitigated to below 45dB_{L_{Amax}} internally then there would only be 8 occasions when noise levels have the potential to exceed the recommended value and therefore noise levels would be within the recommended WHO Guidelines.

The following data table has been taken from the Pilkington Optiphon Laminated Glass for noise control datasheet, dated June 2014.



Pilkington **Optiphon**™

Glass	Sound reduction index (dB)									
	Octaveband Centre Frequency (Hz)						R _w (C; C ₂)	R _w	R _w +C	R _w +C _{tr}
	125	250	500	1000	2000	4000				
Single glazing										
6.8 mm Pilkington Optiphon ™	26	27	31	36	40	39	36 (-1; -4)	36	35	32
8.8 mm Pilkington Optiphon ™	24	28	34	38	37	43	37 (-1; -4)	37	36	33
9.1 mm Pilkington Optiphon ™	26	29	34	38	38	43	37 (-1; -3)	37	36	34
12.8 mm Pilkington Optiphon ™	30	32	37	39	41	51	39 (0; -2)	39	39	37
13.1 mm Pilkington Optiphon ™	30	33	37	40	41	50	40 (0; -2)	40	40	38
Insulating glass units										
6 mm / 16 mm argon / 6.8 mm Pilkington Optiphon ™	22	27	35	42	41	48	38 (-2; -5)	38	36	33
6 mm / 16 mm argon / 8.8 mm Pilkington Optiphon ™	24	26	40	48	46	54	41 (-3; -7)	41	38	34
8 mm / 16 mm argon / 9.1 mm Pilkington Optiphon ™	24	29	41	47	47	55	43 (-3; -7)	43	40	36
10 mm / 16 mm argon / 9.1 mm Pilkington Optiphon ™	29	33	44	46	49	57	45 (-2; -5)	45	43	40
8.8 mm Pilkington Optiphon ™ / 16 mm argon / 12.8 mm Pilkington Optiphon ™	26	36	46	50	52	63	47 (-2; -7)	47	45	40
9.1 mm Pilkington Optiphon ™ / 20 mm argon / 13.1 mm Pilkington Optiphon ™	29	39	49	52	55	63	50 (-3; -8)	50	47	42

Measurements undertaken in accordance with BS EN ISO 10140 and R_w (C; C₂) determined in accordance with BS EN ISO 717-1
 For insulating glass units, there is little difference in the sound insulation for cavity widths in the range 6 to 16 mm
 Pendulum body impact resistance to BS EN 12600 for all Pilkington **Optiphon**™ is Class 1 (B) 1
 To achieve low U values in insulating glass units, Pilkington **Optiphon**™ can be combined with low emissivity glass from the Pilkington **K Glass**™ or Pilkington **Optitherm**™ ranges
 To calculate performance data for Pilkington products, please use our Spectrum online calculator at www.pilkington.co.uk/spectrum
 For glass combinations to achieve an R_w value higher than 50 dB, please contact us for more details

The highest insulation provided by 9.1 mm Pilkington Optiphon/ 20mm argon/13.1mm Pilkington Optiphon is 42dB_{Ctr}. C_{tr} is an adjustment to the R_w scale that can be used for selecting a product to reduce noise from urban road traffic and other noise sources with a large component of low frequencies and is applicable to train noise.

The table below demonstrates the internal noise levels from each train pass by as measured during the day on 27th January 2015.

Time	Direction of travel	Maximum noise level dBL _{Amax}	Noise reduction of Insulating Glass Unit 9.1 mm Pilkington Optiphon/ 20mm argon/13.1mm Pilkington Optiphon	Resultant Internal Noise Level dBL _{Amax}	Meets internal guide value of 45dBL _{Amax}
11:37	Eastbound	82	42	40	Y
11:44	Westbound	90	42	48	N
11:49	Eastbound	81	42	39	Y
11:56	Westbound	95	42	53	N
12:01	Eastbound	80	42	38	Y
12:08	Westbound	91	42	49	N
12:12	Eastbound	87	42	45	Y
12:20	Westbound	91	42	49	N
12:25	Eastbound	85	42	43	Y
12:34	Westbound	91	42	49	N

It has been demonstrated that with the installation of higher specification windows, maximum noise levels as a result of trains on the eastbound line can be reduced to below 45dBL_{Amax}. Maximum levels as a result of westbound trains, on the nearest track to the proposed dwellings would still be above the recommended guide value of 45dBL_{Amax}. However, as there only 8 trains during the night time period this meets with the WHO guidelines that states for a good sleep, it is believed that indoor sound pressure levels should not exceed approximately 45 dB LAmax more than 10–15 times per night.

If windows were to be opened then noise levels would all be above 45dBL_{Amax} and therefore an alternative means of ventilation should be considered that does not compromise the façade insulation or the resulting noise level. Suppliers should be informed that an overall sound reduction of up to 50dBR_w should be provided.

It has been highlighted that there is a freight line to the north of the metro line, which is currently decommissioned. However, if it was to carry freight rail traffic in the future then the noise control measures proposed are considered appropriate in reducing noise from the freight line to within the recommended guide values.

- The consultant has recommended glazing properties for plots likely to be adversely affected by noise from the train line. These recommendations have been used to bring noise levels down to those recommended in the WHO guidelines for community noise, the values used as the benchmark are those which come under the “serious annoyance” guideline values. However it would be possible to bring the noise levels down further if the glazing specification was altered from the recommended 4/6 to 20mm / 4 to 6/6 to 20mm / 4. This would bring a further 3db reduction to noise levels inside the properties, which is significant.

Response:

A higher specification of glazing would provide additional benefits for internal noise levels. Therefore if this was acceptable then it could reduce noise levels by up to 3dB(A) for the glazing stated above.

Note: Glazing is more effective if the panes of glass are different thicknesses as a result of reducing the coincidence frequencies. A 30% difference in thickness is desirable.

- Please also specify the air gap proposed, as this influences the performance of the glazing unit in such a noisy environment.

Response:

For insulating glass units, there is little difference in the sound insulation for cavity widths in the range 6 to 20mm. (As stated by Pilkington Optiphon Datasheet)

I trust the above provides sufficient information to satisfy the EHO's concerns. If any further information is required please do not hesitate to contact me.

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