

Acoustic Report

**Assessment of the Existing
Background Noise Levels and Impact Assessment at
147 Upper Batley Lane, Batley, WF17 0QU for Change of Use
Domestic Detached Garage to form a Dog Grooming Salon**

Our Reference – J2492

Survey Date – 1st June 2016

Survey and Report by – Paul Horsley MIOA

Report compiled by: Paul Horsley MIOA

Date of Report: 06.06.16

A handwritten signature in blue ink, appearing to read 'P. Horsley', with a long horizontal flourish extending to the right.

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1.0 Client

Mrs E Hodgson
147 Upper Batley Lane
Upper Batley
Batley
WF17 0QU

2.0 Subject

Change of Use and alterations to domestic detached garage to form a dog grooming salon
Planning Application No 2016/62/90828/E

3.0 Aims

The aim of this report is to determine the noise sources likely to be introduced into the local environment as a consequence of the use of the change of use of the above site from detached domestic garage to dog grooming salon.

Monitor the pre-existing noise climate at the above site, in accordance with the requirements of BS4142:2014.

Provide an impact assessment on the proposed operations on the nearby residential premises.

Provide mitigation advice for noise output from the site activities when considered at the nearby residential premises in order to maintain the pre-existing amenity of these premises.

4.0 Location and Description of Existing Sources

The domestic garage under consideration for the proposed change of use is positioned off Upper Batley Lane at the junction with Woodlands Road. The garage is set within the grounds of the residential premises No 147 Upper Batley Lane, at the western corner of the site, with a driveway to the north of the garage with parking for up to 4 vehicles and the residential property to the east.

The site is bounded to the northeast by Upper Batley Lane, the northwest by Woodlands Road, the southwest by the premises of No 203 Woodlands Road.

The closest residential premises are positioned to the southwest of the garage. This property consists of 1 No detached bungalow and is positioned 2m from the garage building. The closest façade consists of a solid stone construction gable wall with no apertures or windows.

There are further residential premises located beyond this property; however, these premises are at a greater distance.

Traffic noise is the primary source audible from vehicle movements along both Upper Batley Lane and past the site along Woodlands Road and the nearby road network. Birdsong is also a significant source of noise.

The proposed opening times for the dog grooming salon will be between 09.00 to 17.00 Monday to Friday and 09.00 to 13.00 Saturday by appointment only. The salon will be closed Sunday and Public Holidays.

5.0 Guidance on the Assessment of Noise Levels

The purpose of any criterion or standard for environmental noise should be to safeguard against unacceptable levels of community response, deemed as a feeling of annoyance during daytime or disturbance at night. WHO defines annoyance as "...a feeling of displeasure evoked by noise."

The main source of information relating to noise and the community response are field studies including noise measurements and social surveys. These studies then attempt to establish a correlation between the two sets of results.

In the absence of any definitive guidance and in order to establish suitable noise criteria, it is necessary to rely on general guidance and assessment methods used for community noise sources. Discussions on the current methods are given below.

5.1 BS4142:2014 'Method for Rating and Assessing Industrial and Commercial Sound'

This recently revised standard provides a method for rating and assessing sound of an industrial and/or commercial nature. The method uses outdoor sound levels to assess the likely effect of sound on people who might be inside or outside a dwelling or premises used for residential purposes. It is limited to applicable sounds and is not intended for noise amounting to nuisance or rating noise outside the scope of the Standard.

Unlike the previous version of the Standard, rating levels are not prescriptive, but more context based, with the following applicable to rating values:

- Typically, the greater this difference (variance between impact of background and rating level), the greater the magnitude of impact.
 - A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending upon the context.
 - A difference of around +5 dB is an indication of an adverse impact, depending upon the context.
 - The lower the rating level is relative to the measured sound level, the less it is that the specific sound source will have an adverse impact or a significant impact. Where the rating does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending upon context.
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The Standard introduces additional rating elements, these being subject assessments of tonality, and impulsivity of a sound source, with weighted rating values accordingly applied at the judgment of the assessor.

The introduction of Uncertainty has been applied to the measured values; again, consideration of this is left to the professional executing the survey and assessment. However, steps are provided within the Standard for the reduction of uncertainty in both measurement and calculations of the sound source and rating value.

Actual meteorological conditions are now required to be recorded and reported upon for the survey and report.

5.2 National Planning Policy Framework, NPPF.

The newly incumbent National Planning Policy Framework, NPPF, provides advice to planning authorities in England on how they must seek to minimise the adverse impact of noisy activities on noise sensitive receptors. This NPPF, replacing PPG 24, is not prescriptive with respect to specific noise levels, and is mainly concerned with the advising on good practice for environmental noise assessment.

In the absence of definitive noise criterion within the NPPF most Local Authorities in England default to the daytime noise levels inside dwellings not to exceed NR 35; and NR 25, to be achieved inside dwellings at night to avoid sleep disturbance which is not applicable to this application as operations would only take place during daytime periods, based upon ingress of external noise sources.

5.3 World Health Organization 1999 "Guidance for Community Noise"

This document provides a review of the effects of noise and a description of the principles of the WHO health criteria and guidelines for Community Noise.

The effects of noise in dwellings are identified as sleep disturbance, annoyance and speech interference. For bedrooms, the critical effect is sleep disturbance. Indoor guideline values for bedrooms are 30 dB LAeq for continuous noise and 45 dB L_{Amax} for sound events. At night time, outside sound levels about 1 metre from facades of living spaces should not exceed 45 dB LAeq, so that people may sleep with bedroom windows open. This value is equivalent to that specifies in the Criteria 12 document; however it is now assumed that the noise reduction from outside to inside with the window open is 15 dB. To enable casual conversation indoors during the daytime, the sound level of the interfering noise should not exceed 35 dB LAeq.

To protect the majority of people from being **seriously** annoyed during the daytime, the outdoor sound level from steady, continuous noise should not exceed 55 dB LAeq on balconies, terraces and in outdoor living areas. To protect the majority of people from being **moderately** annoyed during the daytime, the outdoor sound level should not exceed 50 dB LAeq.

Table 1 of the document summarises the guideline values for community noise in specific environments and includes the noise indices to be adopted. Significantly, the corresponding time base to be used for the assessment is also included.

The relevant extracts of Table 1 are reproduced thus:

Specific Environment	Critical health effect (s)	LAeq dB	Time Base hours	LAMax dB
Outdoor living area	Serious annoyance, daytime and evening	55	16	-
	Moderate Annoyance, Daytime and evening	50	16	-
Dwelling, Indoors	Speech intelligibility & moderate annoyance daytime & evening.	35	16	-
	Sleep Disturbance, night-time	30	8	45
Outside Bedroom	Sleep disturbance, window open (Outdoor Values)	45	8	60

5.4 Subjective Impression of Noise Changes

The following Table provides a semantic scale that may be used to “subjectively” rate changes in sound pressure level.

Table 1: Subjective effect of changes in sound pressure level

Change in sound level dB	Change in Power		Change in apparent loudness
	Decrease	Increase	
3	1/2	2	Just perceptible
5	1/3	3	Clearly noticeable
10	1/10	10	Half / Twice as loud
20	1/100	100	Much quieter / louder

After Bies and Hansen

The above table is taken from Professor Colin H Hansen’s publication “Fundamentals of Acoustics” page 41, for the Department of Mechanical Engineering, University of Adelaide. This table also appears in “Engineering Noise Control” by Colin Hansen and David Bies, a comprehensive reference book, amongst others.

6.0 Survey Equipment

Integrating Sound Level Meter, RION NA-27, Type 1, Serial No 431986

RION UC-53A Microphone Serial No 35771

RION NC-74 Calibrator Serial No 530712

Windshield

Tripod

7.0 Survey Method

The writer carried out attended noise monitoring of the background noise climate at the site close to the south western corner of the garage, the most likely to be affected by the activities of the site and therefore classified as the worst case position to the site.

Refer to Appendix A for a marked up locational plan of the site and survey position.

The attended surveys were executed on 1st June 2016 in accordance with the requirements of BS4142:2014.

LA_{eq} , LA_{10} , LA_{90} , LA_{Max} and LA_{Min} indices sound measurements were taken using the sound analyser.

The measurement indices noted above are defined as follows:

LA_{eq}, T	the "A" weighted equivalent continuous noise level of sample period T
LA_{10}, T	the "A" weighted level exceeded for 10% of sample period T
LA_{90}, T	the "A" weighted level exceeded for 90% of sample period T
LA_{max}	The "A" weighted maximum level during the sample period T
LA_{min}	The "A" weighted minimum level during the sample period T

The Sound Level Meter was mounted on a tripod at a height of 1.5m above the floor. The meter was set to record continuous data over 30-minute periods.

The sound level meter was calibrated before and after the measurements using the calibrator to ensure accuracy of the results. No variations were noted between calibrations and the results obtained can be deemed to be an accurate representation of the levels recorded.

8.0 Prevailing Weather Conditions

1st June 2016 +11°C, Clear sky, Wind 0 – 3 m/s N, 1026 mb, 90% Rh.

9.0 Noise Survey Results

During the attended monitoring period noise samples were recorded, using 1/1 Octave Centre Band analysis. These monitoring samples were collected from the site boundary with the residential premises of No 203 Woodlands Road.

The table of results below indicate the noise levels recorded during the monitoring period, with a brief description of the noise sources contributing to the monitored noise levels recorded.

An overview of monitoring positions is given below:-

1. Location 1 relates to south western boundary of the residences.

Note

The above monitoring locations should be read in conjunction with the site layout appearing in Appendix A of this report.

10.0 Noise Survey Results Table

Location	Description of Location	Data ID	L _A max	L _A eq	L _A 10	L _A 90	Measurement Duration	Date	Time	Comment
			dB	dB	dB	dB				
1	South Western Site Boundary of No 147 Upper Batley Lane	1	74.5	56.0	59.2	49.3	00:30:00.00	01-06-2016	10:15:44	Traffic flow noise dominant along Upper Batley Lane and passing along Woodlands Road. Aircraft. Birdsong. M62 motorway traffic noise between direct movements.
		2	66.6	55.5	59.2	48.9	00:30:00.00	01-06-2016	10:45:44	
		3	72.8	55.1	58.1	48.3	00:30:00.00	01-06-2016	11:15:44	
		4	69.0	54.0	57.6	47.8	00:30:00.00	01-06-2016	11:45:44	
		5	80.3	58.0	58.9	48.5	00:30:00.00	01-06-2016	12:15:44	
		6	71.9	55.9	59.5	48.9	00:30:00.00	01-06-2016	12:45:44	

11.0 Discussion and Design Targets

The above results table indicates the noise data collected for typical periods and can be deemed as representative of the noise climate for the area.

The general noise climate for the area of the site and closest noise sensitive dwellings is dominated by traffic movements along Upper Batley Lane, Woodlands Road and the surrounding road network.

In order not to unduly affect the amenity of the nearby residential premises, it is advisable to take reference from the available standards and guidance, noted in Section 5 above.

If we consider BS4142:2014, we find that a noise level rating of a difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending upon the context. A difference of around +5 dB is an indication of an adverse impact, depending upon the context. The lower the rating level is relative to the measured sound level, the less it is that the specific sound source will have an adverse impact or a significant impact. Where the rating does not exceed the background sound level, this is an indication of the specific sound source having a low impact, depending upon context.

Taking reference from W.H.O., we find that the maximum allowable external noise level has been deemed as 35 LAeq dB for continuous sources internal within noise sensitive premises for daytime periods.

As can be seen from 5.3 above, an increase in noise levels of up to +3 dB is just perceptible and not likely to give rise to complaints. However, the baseline should not be increased such that it exceeds the W.H.O or BS4142:2014 limits, and as such it is intended that the design target for the internal spaces should be in line with this figure so that the amenity is preserved when the yard is operational.

Taking account of the above standards and their recommendations and the existing noise climate for the specific area, it would be prudent to set the design target noise levels in accordance with accepted limits recognised both nationally and internationally for the site noise output contribution.

Table of Recommended Design Target Noise Limits When Considered at the Site Boundary

Relevant Period	Existing Average Noise Climate	Target Output Noise Limits
Daytime (0900 – 1800 Hrs)	$L_{Aeq} - 56 \text{ dB}$	$L_{Aeq} - 46 \text{ dB}$

The above recommendations assume that the noise output will be non-tonal in nature without any significant features, when considered against the context of the local environment.

12.0 Impact Assessment

The proposal for the site is to convert the existing detached double garage into a dedicated dog grooming salon. This will be accomplished by removing the existing roller shutter door and replacing it with a solid shop front. Dividing the interior of the garage into 5 No dedicated areas, with an additional private store, not related to the dog grooming business. Refer to Appendix C for the layout proposal drawing.

The 5 No areas will be, entrance / waiting area, 2 No cutting benches, wet room for washing dogs, Drying room for drying the dogs and a toilet facility. The wash and dry rooms will be individually enclosed rooms formed using stud partitions and having a doorway. The cutting and entrance / waiting areas will be open plan. Other than the entrance door and window arrangement the formed rooms will be self-contained with no additional vision panels.

The likely noise sources to be introduced into the salon will be as follows:

- 2 No High Velocity Dryers rated at 80 dBA at 1m
- 4 No Finishing Dryers rated at 75 dBA at 1m
- 2 No sets Clipper rated at 51 dBA at 1m

Based upon the above data, the worst case situation would be located within the drying room with the High Velocity Dryers in operation. Assuming there are 2 No dogs being attended to at any one time, the noise generated within the drying room will be the sum of the 2 No High Velocity dryers in operation at once, i.e. 83 dBA at 1m. The room is likely to be reverberant due to solid reflective surfaces, therefore, the resultant reverberant noise level within the room, 2.53m x 1.76m x 2.3m, is likely to be -5 dB due to

room finishes providing a reverberant noise level of 78 dBA due to 2 No high velocity dryers operating simultaneously.

The existing wall is a rendered blockwork construction, with a superficial mass estimated at 85Kg/m², providing an estimated sound reduction of – 22 dB to the transmission of sound.

With a transmission area of 2.3m x 2.53m, the external wall area of the proposed drying room, the transmission will be determined as follows:

$$R2 = R1 + 10 \log (A) - SRI - 20 \log r \quad \text{dB}$$

Where R1 is the reverberant sound level in the room, 78 dBA

R2 is the resultant sound level at recipient

A is the area of the partition, 2.3 x 2.53 = 5.82m

SRI is the sound reduction index of the partition = 22 dB (est.)

r is the distance to the recipient = 2m to No 203 façade.

Substituting the values as follows

$$R2 = 78 + 10 \log (5.82) - 22 - 20 \log (2) = 78 + 7.6 - 22 - 6 = 57.6 \text{ dBA}$$

The above result is +11.6 dB above the design target and as such likely to give rise to sound that is audible at the neighbouring premises gable wall.

Further mitigation will be necessary to reduce the calculated noise output when considered at this location.

For robustness the following is an assessment in accordance with BS4142:2014, which has been based upon the results above for the proposed worst case noise source associated with the dog grooming salon. All readings have been rounded to the nearest whole number.

Description	Indices	Sound Level	Comments
Calculated noise output within the drying room of the Dog Grooming Salon	L_{Aeq}	78 dB	2 No High Velocity Dryers operating simultaneously
SRI of existing garage wall	L_{Aeq}	-22 dB	Estimated based upon superficial mass
Area Correction	L_{Aeq}	+7 dB	
Distance Correction	L_{Aeq}	-6 dB	20 Log (2)
Resultant Noise due to drying units	L_{Aeq}	57 dB	
Existing Background Noise Level	L_{A90} (30mins)	49 dB	Background level consisted of existing traffic noise and birdsong.
Acoustic feature correction		+2 dB	Intermittent operation
Rating Level	(57 + 2)	59 dB	
Background Noise Level	L_{A90} (30 mins)	49 dB	Traffic noise and birdsong dominant
Excess of Rating over background sound level	(59 – 49)	= +10 dB	
The excess of +10 dB is above than +5 dB which, in the context, is marginal with respect to an adverse impact due to the plant operation outside the premises of No 203 Woodlands Road.			
Uncertainty of the assessment There is uncertainty in the calculation as it is based upon a measurement with a correction applied which may account for a 3 dB variation in the actual values due to potential error in the transmissibility assessment. The measurements presented indicate that the confidence of the rating for the specific source.			

A rating value of +10 dB is of significance that the noise source is likely to give rise to audibility, and that further mitigation measures will be necessary to the structure to alleviate the output level to an acceptable value.

13.0 Mitigation Recommendations

Whilst the above assessment indicates that the noise source of the High Velocity Dryers a +10 dB rating value in accordance with BS4142:2014 is significant, it is in context with the local area noise climate and not likely to result in justifiable complaints relating to noise.

In order to reduce the noise produced by the dryers from unduly affecting the nearby residential premises consideration could be given to providing additional acoustic treatment to the internal walls and ceiling of the garage building.

The proposal is to further increase the sound insulation of the internal surfaces by at least 13 dB to allow the design target of 46 LAeq dB to be achieved, when considered at the façade of the neighbouring premises of No 203 Woodlands Road.

The proposal for the acoustic treatment is as follows:

Internal Wall Lining

Fit a 50mm – 75mm wooden or metal stud against the external wall.

Internally line the void with 45 Kg/m³ density mineral wool.

Face the stud with 2 No layers of 12.5mm sound block plasterboard, having staggered joints.

Finish with a 3mm – 5mm thick plaster skim.

Ceiling

Line the existing open joists with 2 No layers of Soundblock plasterboard, having staggered joints.

Fit a 100mm thick layer of 45 Kg/m³ density mineral wool above the ceiling, between the joists.

Finish with a 3mm – 5mm thick plaster skim.

Internal Walls

Form the internal walls using a 75mm wide wooden or metal stud system.

Internally line the void with 45 Kg/m³ density mineral wool.

Fit 1 layer of 12.5mm sound block plasterboard.

Acoustically seal the junctions between the ceiling and external walls.

Inclusion of the above specification will increase to sound transmissibility of the external walls to achieve a DnT,w 45 dB reduction to the passage of sound.

A recalculation of the resultant noise from the operation of the High Velocity Dryers is provided below.

$$R2 = 78 + 10 \text{ Log } (5.82) - 45 - 20 \text{ Log } (2) = 78 + 7.6 - 45 - 6 = 34.6 \text{ dBA}$$

The calculated resultant noise level at the residence of No 203 Woodlands Road is below the design target of 46 LAeq dB and as such not likely to be audible or generate justifiable complaints relating to noise from the proposed change of use premises.

A similar BS4142:2014 assessment is provided below for further confirmation

Description	Indices	Sound Level	Comments
Calculated noise output within the drying room of the Dog Grooming Salon	L _{Aeq}	78 dB	2 No High Velocity Dryers operating simultaneously
SRI of acoustically treated garage walls and ceiling	L _{Aeq}	-45 dB	Estimated based upon treatment proposals
Area Correction	L _{Aeq}	+7 dB	
Distance Correction	L _{Aeq}	-6 dB	20 Log (2)
Resultant Noise due to drying units	L _{Aeq}	34 dB	
Existing Background Noise Level	L _{A90} (30mins)	49 dB	Background level consisted of existing traffic noise and birdsong.
Acoustic feature correction		+2 dB	Intermittent operation
Rating Level	(34 + 2)	36 dB	
Background Noise Level	L _{A90} (30 mins)	49 dB	Traffic noise and birdsong dominant
Excess of Rating over background sound level	(36 – 49)	= -13 dB	
The excess of -13 dB is below than +5 dB which, in the context, is insignificant with respect to an adverse impact due to the plant operation outside the premises of No 203 Woodlands Road.			
Uncertainty of the assessment There is uncertainty in the calculation as it is based upon a measurement with a correction applied which may account for a 3 dB variation in the actual values due to potential error in the transmissibility assessment. The measurements presented indicate that the confidence of the rating for the specific source.			

A rating value of -13 dB is of insignificant with respect to noise and is not likely to give rise to audibility, and no further mitigation measures would be necessary to the structure to alleviate the output level to an acceptable value.

Further Considerations

Since we are dealing with a dog grooming salon, dogs barking is a consideration that may occur. Dog barking will be minimized at all times during the operation of the site. This will be accomplished by have dogs accompanies at all times whilst on site and not left unattended in the grooming, washing or drying rooms. The salon will operate an appointment system and, as such, the likelihood of multiple dogs on site at any one time is minimized. The dogs will be brought directly into the salon after alighting the delivery vehicle, either clients own or salon collected, again minimizing external dog bark noise possibilities. The business will be operated during recognized working time periods only, as noted previously, and not on Sunday or Public Holidays, reducing the likelihood of noise complaints. All equipment used on site will be purchased from recognized industry suppliers and maintained in accordance with the manufacturer's schedules.

Due to the nature of the high internal humidity of the salon wash and drying rooms, extraction may be required in the form of fan to atmosphere or internal humidifiers. If extraction fans are to be used on site, then the external noise limits noted above, 46 LAeq dB at the neighbouring premises, should be met. This could be achieved by careful selection of the plant and equipment below the limiting design target or by installation of suitably selected atmospheric noise control to the exhaust side of the fan. Either method would be acceptable, provided that the design target is met when the plant is operational.

14.0 Report Summary

A noise assessment in support of the planning application for change of use of the domestic garage to dog grooming salon business has been completed in accordance with the requirements of BS4142:2014.

The primary pre-existing noise climate for the area at the nearby residential premises is assessed as being due to the movement of traffic along Upper Batley Lane, Woodlands Road and the local road network, with residential activities, birdsong and aircraft also contributing to the background.

Use has been made of the relevant national and international standards with regards noise and limiting noise levels set for the site activities for during the opening time periods, when assessed at the relevant site boundary.

Based upon the limiting recommendations of the relevant standards and the local noise climate the following design target noise has been proposed.

Table of Recommended Design Target Noise Limits

Relevant Period	Existing Average Noise Climate	Target Output Noise Limits
Daytime (0900 – 1800 Hrs)	$L_{Aeq} - 59 \text{ dB}$	$L_{Aeq} - 49 \text{ dB}$

An impact noise assessment has been carried out for the specific noise sources identified, these being the High Velocity Dryers, Finishing Dryers and Electric Clippers.

Calculations indicate that the operations above are achieving a +11.6 dBA value when considered against the above design target due to breakout from the existing structure at the neighbouring premises. This equates to a BS4142:2014 rating of +10 dB, likely to give rise to complaints.

Mitigation measures have been proposed for the existing garage structure to increase the sound insulation properties. Inclusion of the proposed measures will increase the sound insulation to $D_{nT,w} 45 \text{ dB}$. This results in a noise breakout of 34.6 dBA when considered at the neighbouring residence, which represents a -14.4 dB below the design target and a similar BS4142:2014 rating of -13 dB, not likely to give rise to justifiable complaints from the internal activities of the proposed dog grooming salon.

Dog barking has been considered and determined to be a low risk with respect to noise.

This conclusion has been based upon the following;

- The dog grooming salon will operate an appointment system for clients, minimizing multiple dogs on site at any one time,
- The dogs will be brought directly into the salon after alighting the delivery vehicle, either clients own or salon collected, again minimizing external dog bark noise possibilities,
- All dogs will be kept under direct supervision of the salon whilst on site and not left unattended in the grooming, washing or drying rooms at any time,
- The business will be operated during recognized working time periods only, from 09.00 to 17.00 Mon to Fri and 09.00 to 13.00 Sat, and not on Sunday or Public Holidays, reducing the likelihood of noise complaints.
- All equipment used on site will be purchased from recognized industry suppliers and maintained in accordance with the manufacturer's schedules.

Appendix A Locational Outline and Monitoring Position



Appendix B Noise Survey Results Frequency Analysis Table

					Leq dB in Frequency Bands Hz									
Location	Description of Location	Data ID	LAmax	LAeq	63	125	250	500	1	2	4	8	LA10	LA90
			dB	dB	Hz	Hz	Hz	Hz	kHz	kHz	kHz	kHz	dB	dB
1	South Western Site Boundary of No 147 Upper Batley Lane	1	74.5	56.0	66.2	56.5	51.3	50.4	51.8	49.2	45.3	38.9	59.2	49.3
		2	66.6	55.5	65.2	54.8	49.9	50.1	52.0	46.3	46.0	40.8	59.2	48.9
		3	72.8	55.1	65.0	54.2	52.8	50.5	52.1	46.5	39.0	32.7	58.1	48.3
		4	69.0	54.0	63.5	53.0	49.4	49.1	51.3	45.6	37.0	31.1	57.6	47.8
		5	80.3	58.0	68.7	61.2	62.4	53.8	52.2	46.6	38.9	32.7	58.9	48.5
		6	71.9	55.9	69.0	57.8	51.1	50.7	52.6	47.7	41.1	35.4	59.5	48.9

Appendix C

Proposal Layout for Modifications

