

# Appendix G1

# **Noise Measurement Site Survey**



# **A77 Maybole Bypass**

#### **Noise Measurement Site Survey**

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Amey Report Template - CON-GEN/Template/001/01



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### 1. Noise Baseline Survey Report

#### 1.1. Introduction

- 1.1.1. The purpose of this report is to present the results of noise survey measurements undertaken within the proposed area for the Maybole Bypass to inform the environmental impact assessment of existing ambient noise levels. The information was used to help validate the acoustic road noise model (CADNA) used for predictive noise calculations.
- 1.1.2. This involved completing short term noise surveys in accordance with shortened procedure as described in Calculation of Road Traffic Noise (CRTN) to quantify road traffic noise at various representative locations along the proposed scheme corridor.
- 1.1.3. Attended noise surveys in an hemispherical 'free field' condition or 'façade conditions were undertaken in and around Maybole (north and south of the existing A77 route) between 21<sup>st</sup> and 22<sup>nd</sup> May 2013; 29<sup>th</sup> and 30<sup>th</sup> May and 6<sup>th</sup> June 2013 to establish existing ambient noise levels at sensitive locations. Noise levels were recorded at a total of six positions within the proposed area. Two to the north of the proposed bypass, two north and two south of the existing A77. These were undertaken during weekday and night time hours.



## 2. Site Description

#### 2.1. Site Location

- 2.1.1. The A77 passes through the centre of Maybole along the High Street, the main retail area of the town. The High Street has been developed since the Medieval Ages and has restricted carriageway and footway widths, which results in poor conditions for pedestrians and road users.
- 2.1.2. The proposed route for the scheme is located to the north of the small town of Maybole, South Ayrshire. Starting at the approximate co-ordinates: 228873, 609500 on the A77, south of Maybole, the centreline of the proposed route extend north east through arable fields and hedgerows. The proposed centreline of the route re-joins the A77, north of Maybole, at the approximate co-ordinates: 232147, 612962. The location of Maybole is illustrated within Drawing 25000182/LND/024, Appendix A.

#### 2.2. Measurement Locations

2.2.1. Measurement locations are illustrated within Drawing 25000182/ENV/002, Appendix A and detailed below.

#### Measuring Location 1: 40 Burns Drive (NGR: 229099, 609912)

2.2.2. Measurements were undertaken at Burns Drive on 22nd May 2013. The measurement location is approximately 6m from the edge of the carriageway. The area to the north of the measurement location is under construction for further residential properties. During the survey steady traffic from the B7023 Culzean Road and intermittent traffic from the local residential area was recorded.

#### Measuring Location 2: Gardenrose Path (NGR: 229520, 610444)

2.2.3. Measurements were undertaken at Gardenrose Path on 21st/22nd May 2013 for night time survey and 22nd May for daytime survey. The area is situated within a semi-rural setting with rows of residential properties. During the day time survey light traffic from the Kirklandhill Path and background traffic noise of the A77 was recorded.

#### Measuring Location 3: 16 Crosshill Road (NGR: 230297, 609870)

2.2.4. Measurements where undertaken at 16 Crosshill Road on 30th May 2013 for daytime surveys. The measurement location was 1m from the front façade. The area is within Maybole town centre, located near to Glebe Park. Constant traffic noise is noted along the B2 from the A77 carriageway.

#### Measuring Location 4: Cargliston House (NGR: 229865, 611009)

2.2.5. Measurements were undertaken at Cargliston House on 29th May 2013 located north of Maybole town Centre within a rural setting with narrow farm roads. The farm is served by the B7023 and B7024 roads which have a steady traffic flow.



#### Measuring Location 5: Kirklandhill Farm (NGR: 229867 610839)

2.2.6. Measurements were undertaken at Kirklandhill Path on 6th June 2013 1m from the front façade for day time surveys over 3 consecutive hours. The area is within a rural setting with surrounding fields used for grazing.

#### Measuring Location 6: Netherculzean Farm (NGR: 231826, 611515)

2.2.7. Measurements were undertaken at Netherculzean Farm on 30th May 2013 for daytime surveys. The farm is surrounded by open fields with cattle grazing. Constant traffic noise is audible from the A77 carriageway. The measurement location is 1m from the front façade.

#### Measuring Location 7: Netherculzean Farm (NGR: 231826, 611515)

2.2.8. Further measurements were undertaken 6th June 2013, 1m from the façade of the farm house over 3 consecutive hours.

#### Measuring Location 8: Low Grange Bungalow (NGR: 231758, 612831)

2.2.9. Measurements were undertaken at a location near to the Low Grange Bungalows' on 29th May 2013 2013. The bungalows are approximately 400m from the A77 carriageway.



### 3. Methodology

#### 3.1. Relevant Standards

- 3.1.1. Baseline conditions were determined in accordance with Calculation of Road Traffic Noise (CRTN - ISBN 0 11 550847 3) issued by the Department of Transport, Welsh Office in 1988 and BS 5228:2009. The shortened measurement procedure was used during the survey locations. Measurements of LA10 are made over three consecutive hours between the hours 1000 and 1700 hours. Using LA10 (3-hour) as the arithmetic mean of the three consecutive values of hourly LA10 (18-hour) can be calculated.
- 3.1.2. Within the survey the Scottish Development Department (SDD) Measurement Procedure within CRTN is used for noise measurements. This differs from the shortened measurement procedure above in that it identifies the position to be 1m in front of a façade. It also suggests that for a busy road between 1000 and 1600 when the traffic flow is comparatively uniform, a 15 minute survey yields an L10 result which is 2dB above the LA10 (18hour) from 0600 to 2400 hours. This can only be undertaken during the months May or August. The survey was undertaken during the month of May as this would be representative of the year round traffic and worst case scenario
- 3.1.3. The noise measurement parameters recorded during the survey period were LAeq, LAmax, LA10 and LA90 levels.

#### 3.2. Instrumentation

- 3.2.1. The following equipment was used during the noise survey:
  - Brüel & Kjaer Type 2250 Sound Level Meter (Serial No. 2717775)
  - Brüel & Kjaer Type 4189 Microphone (Serial No. 2710690)
  - Brüel & Kjaer Type 4231 Acoustic Calibrator (Serial No. 2714830)
  - Richard Paul Russell Ltd., Kestrel Wind Speed Meter (Serial No. 1621547)
  - Anemo handheld anemometer with compass
  - GPS Receiver GlobalSat BT-338 (Serial No. AAW072069)
- 3.2.2. The battery power level was regularly monitored throughout the measurement period.
- 3.2.3. In all instances the SLM was mounted on a tripod, with microphone set approximately 1.2m above ground level and set at grazing incidence in 'free field' or 'façade' conditions. All surveys were attended surveys in hemispherical conditions.
- 3.2.4. As the scheme lies within a semi- rural area with farmland to the north and south, the A77 is considered to be the main source of noise within the study area. A windshield was fitted to the microphone to minimise the effects of wind-induced noise across the microphone diaphragm.



#### 3.3. Calibration

3.3.1. The sound level meter was calibrated in accordance with the manufacturer's instructions before and after each series of measurements. Copies of valid accredited calibration certificates are enclosed within Appendix B.

#### 3.4. Meteorological Conditions

3.4.1. A number of site visits were made during the month of May and June to carry out noise measurements during both daytime and night time periods. The weather conditions were recorded during each survey period and illustrated within Appendix C, for site details. The meteorological conditions such as wind speed, gusting winds, rain, and/or e road surface conditions found on site did comply fully with the requirements of CRTN meteorological conditions for the entire measurement period.

#### 3.5. Measurement Period

- 3.5.1. Daytime noise measurements surveys were undertaken over either, three consecutive hours between 10:00 and 17:00 or three consecutive 15mins between 10:00 and 16:00 hours in accordance with the shortened measurement procedure described within CRTN and the Scottish Development Department (SDD) Measurement Procedure.
- 3.5.2. One, three consecutive hours survey was undertaken during night time hours between 23:00 and 03:00 at Gardenrose Path in accordance with CRTN
- 3.5.3. No unusual acoustic events occurred during measurements, and the data is considered to provide a fair representation of the acoustic environment at each measurement location.



### 4. Results

#### 4.1. Daytime results

- 4.1.1. Day noise surveys were carried out over several days 22nd May; 29th and 30th May and 6th June 2013 by Amey personnel. Meteorological conditions at the start and during the noise survey are recorded within the Site Specific Survey Forms (Appendix C).
- 4.1.2. All measurements varied between 15mins to 3 hours. In each case, the time period was considered appropriate to provide a good representation of the typical noise climate at each measurement location.
- 4.1.3. This information was used to validate the acoustic road model used for the predictive noise calculation.
- 4.1.4. The results of the measurement are tabulated below with detailed information within Appendix C.

Table 1:	Table 1: Results of Noise Survey at representative locations (Daytime)												
Date	Start	Stop	Elapsed	L <sub>Aeq</sub>	L <sub>AF90</sub>	L <sub>AF10</sub>	L <sub>AMAX</sub>	Comments/					
	Time	Time	Time	(dB)	(dB)	(dB)	(DB)	Constraints					
	Measuring	Location I	D No. 01 –	Gardenro	ose Path	n (Free fie	eld condit	ions)					
	12:05	12:20	15mins	56.0	40.9	55.9	79.0	Intermittent traffic					
	13:20	13:35	15mins	55.5	44.0	57.6	78.8	From Gardenrose Path. Busier near					
	14:40	14:55	15mins	56.0	43.2	55.8	85.1	to 15:00 for school					
		Average		55.8	42.7	56.4	-	traffic from the A77.					
22/05/13		L <sub>A10,18hr</sub>		-	-	56.9	-						
	Measuring	Location I	D No. 02 –	Burns Dr	ive (Fre	e field co	onditions)						
	12:50	13:05	15mins	54.0	47.0	58.2	67.0	Constant Traffic					
	14:05	14:20	15mins	52.6	46.9	54.9	76.0	from the B7023 – Culzean Road.					
	15:15	15:30	15mins	42.0	36.6	44.8	61.2	Noise from construction site for					
		Average		51.8	43.5	52.6	-	new residential					
		$L_{A10,18hr}$		-	-	52. 9	-	properties.					
	Measuring	Location I	D No. 03 –	Cargilsto	on (Free	field con	ditions)						
29/05/13	10:15	10:30	15mins	45.1	36.2	48.7	61.3	Intermittent traffic noise from the rural road between					
	10.20	10:45	15mins	11 9	36.5	17.9	60.9	Area was a					
	10.30	10.40	Tomins	44.0	30.0	47.0	00.0	farmland with farm					
	10:45	11:00	15mins	47.1	38.4	49.6	66.9	animals present on					
	11:00	11:15	15mins	49.9	35.8	48.2	66.0	5110.					

**Document Title:** Noise Measurement Site Survey



Date         Start Time         Stop Time         Elapsed Time $L_{Arror}(B)         L_{Arror}(B)         L_{Aux}(B)         L_{Aux}(Constant trafficflow from Crosshillstreet. Bor oreshillstreet. Bor oresh$	Table 1:	Results of	Noise Sur	vey at repr	esentativ	e locati	ons (Day	time)	
Time         Time         (dB)         (dB)         (dB)         (dB)         (dB)         (dB)         (dB)         (dB)         Constraints           Average         47.2         36.7         48.6         .	Date	Start	Stop	Elapsed	L <sub>Aeq</sub>	L <sub>AF90</sub>	L <sub>AF10</sub>	L <sub>AMAX</sub>	Comments/
		Time	Time	Time	(dB)	(dB)	(dB)	(DB)	Constraints
I + I + I + I + I + I + I + I + I + I			Average		47.2	36.7	48.6	-	
Measuring Location ID No. 04 – Low Grange (Free field conditions)           13:45         14:00         15mins         60.4         38.3         64.9         77.0         Constant traffic flow including HGVs and tractors passing.           14:15         14:30         15mins         59.0         38.6         64.3         -           LATO, 18hr         -         -         64.8         -         -           Measuring Location ID No. 05 - 16 Crosshill Road" (Facade conditions)           10:20         10:35         15mins         61.5         45.6         64.3         80.3         street conditions)           11:40         11:55         15mins         60.5         45.6         64.3         80.3         street conditions)           30/5/13         11:40         11:55         15mins         52.5         45.6         64.3         80.3         street conditions)           Measuring Location ID No. 06 - Nether Culzean Farm* (Free field conditions)           11:05         11:20         15mins         58.5         47.8         61.4         71.6         Constant traffic from the A77, cattle in fields.           11:05         11:20         15mins         58.5         47.8         61.2         7.0         fields.			-	-	49.1	-			
		Measuring	Location I	D No. 04 –	Low Gra	nge (Fre	e field co	onditions	)
14:15       14:30       15mins       59.0       38.9       63.6       78.3       HGvs and tractors passing.         HGvs and tractors passing.         Measuring Location ID No. 05 - 16 Cross-lill Rod-" (Facat-conditions)         10:20       10:35       15mins       61.5       45.1       63.7       81.9       Constant traffic flow frow Crosshill street. Bus route.         11:40       11:55       15mins       60.5       45.6       64.3       80.3       Links to the existing A77 Area next to Recreational Park.         Measuring Location ID No. 06 -Nether Culzean Farme* (Free Field conditions)         11:05       11:20       15mins       58.5       47.8       61.4       71.6       Constant traffic from the A77, catile in fields.         11:05       11:20       15mins       58.5       47.8       61.4       71.6       Constant traffic from the A77, catile in fields.         11:05       11:20       15mins       57.6       46.2       60.9       71.1       Fields.         14:00       15:00       1hour       57.8       47.0       61.2       -       Constant traffic from A77, sheep in fields and rookery crows with the fields and rookery from A77.         16:00       17:00       1hour       57.8       47.8       61.1		13:45	14:00	15mins	60.4	38.3	64.9	77.0	Constant traffic
Average         59.8         38.6         64.3         -         Passing.           Measuring Location ID No. 05 - 16 Cross-till Rost* (Façate conditions)         10:20         10:35         15mins         61.5         45.1         63.7         81.9         Constant traffic flow from Crosshill street. Bus route.           11:40         11:55         15mins         60.5         45.6         64.3         80.3         Street. Bus route.         Links to the existing A77 Area next to Recreational Park.           30/5/13         Average         60.1         45.4         61.4         71.6         Constant traffic from the A77, cattle in fields.           11:05         11:20         15mins         58.5         47.8         61.4         71.6         Constant traffic from the A77, cattle in fields.           11:05         11:20         15mins         57.6         46.2         60.9         71.1         From the A77, cattle in fields.           11:05         12:20         15mins         57.6         46.3         61.1         67.7         Constant traffic from A77, sheep in fields and rookery crows with the traffic from A77, sheep in fields.           11:05         16:00         1hour         57.8         47.4         61.1         69.4         fields and rookery crows with the trees.           16:00		14:15	14:30	15mins	59.0	38.9	63.6	78.3	HGVs and tractors
Image: Constant is a constant if the second is a constant is a constant if the second is a constant is a constant if the second is a consta consta consequal to the second is constant if the second is a			Average		59.8	38.6	64.3	-	passing.
Measuring Location ID No. 05 – 16 CrossHII Roat' (Façate conditions)         10:20       10:35       15mins       61.5       45.1       63.7       81.9       Constant traffic flow from Crosshill street. Bus route.         30/5/13 $11:40$ 11:55       15mins       60.5       45.6       64.3       80.3       Street. Bus route.         30/5/13 $\mathbb{A}$ verage $60.1$ $45.4$ $64.0$ $e^{-1}$ $e^{-1$			$L_{A10,18hr}$		-	-	64.8	-	
$30/5/13 \begin{array}{ c c c c c c } \hline 10:20 & 10:35 & 15mins & 61.5 & 45.1 & 63.7 & 81.9 \\ \hline 11:40 & 11:55 & 15mins & 60.5 & 45.6 & 64.3 & 80.3 \\ \hline 11:40 & 11:55 & 15mins & 60.1 & 45.4 & 64.3 & 80.3 \\ \hline \\ $		Measuring	Location I	D No. 05 –	16 Cross	hill Roa	d* (Faça	de condit	ions)
30/5/13         11:40         11:55         15mins         60.5         45.6         64.3         80.3         Interest Bus route. Links to the existing A77 Area next to Recreational Park.           30/5/13         Average         60.1         45.4         64.0         -         Links to the existing A77 Area next to Recreational Park.           Measuring Location ID No. 06 – Nether Culzean Farm* (Free field conditions)         11:05         11:20         15mins         57.6         46.2         60.9         71.1         Constant traffic from the A77, cattle in fields.           11:05         12:00         15mins         57.6         46.3         61.1         67.7         Form the A77, cattle in fields.           14:00         15:00         1hour         57.6         46.3         61.1         67.7         Form A77, sheep in fields and rookery crows with the trees.           14:00         15:00         1hour         57.8         47.8         61.2         71.1         Form A77, sheep in fields and rookery crows with the trees.           16:00         17:00         1hour         57.7         47.2         61.1         -         -           06/06/13         Measuring Location ID No.07 - Kirklandhill Farm (Façade conditions)         -         -         -         60.1         -           10:15 <td></td> <td>10:20</td> <td>10:35</td> <td>15mins</td> <td>61.5</td> <td>45.1</td> <td>63.7</td> <td>81.9</td> <td>Constant traffic</td>		10:20	10:35	15mins	61.5	45.1	63.7	81.9	Constant traffic
$30/5/13 \qquad \begin{array}{ c c c c } \hline Average & \hline & \hline & \hline & \hline & \hline & & \hline & & \hline & & & & \\ \hline & \hline &$		11:40	11:55	15mins	60.5	45.6	64.3	80.3	street. Bus route.
30/5/13         next to Recreational Park.           Measuring Location ID No. 06 –Nether Culzean Farm* (Free field conditions)           11:05         11:20         15mins         58.5         47.8         61.4         71.6         Constant traffic from the A77, cattle in fields.           12:05         12:20         15mins         57.6         46.2         60.9         71.1         The A77, cattle in fields.           Measuring Location ID No. 06 – Nether Culzean Farm (Façade conditions)         Constant traffic from A77, sheep in fields and rookery crows with the trees.           14:00         15:00         1hour         57.6         46.3         61.1         67.7           15:00         16:00         1hour         57.8         47.4         61.1         69.4           16:00         17:00         1hour         57.7         47.2         61.1         -           06/06/13         Measuring Location ID No.07 – Kirklandhill Farm (Façade conditions)         Background noise from road traffic from road traffic from road traffic from road traffic from road traffic           10:15         11:15         1hour         45.5         28.4         47.1         66.4         Background noise from road traffic from road traffic           11:15         1:1			Average		60.1	45.4	64.0	-	Links to the existing A77 Area
Measuring Location ID No. 06 -Nether Culzean Farm* (Free field conditions)           11:05         11:20         15mins         58.5         47.8         61.4         71.6         Constant traffic from the A77, cattle in fields.           12:05         12:20         15mins         57.6         46.2         60.9         71.1         Constant traffic from the A77, cattle in fields.           Average         55.8         47.0         61.2         -         Constant traffic from A77, sheep in fields and rookery crows with the trees.           14:00         15:00         1hour         57.6         46.3         61.1         67.7           15:00         16:00         1hour         57.8         47.8         61.2         71.1           16:00         17:00         1hour         57.8         47.8         61.2         71.1           16:00         17:00         1hour         57.8         47.8         61.2         71.1           06/06/13         Measuring Location ID No.07 - Kirklandhill Farm         Faceade conditions)         Free field conditions)           10:15         11:15         1hour         45.5         28.4         47.1         66.4         Background noise from road traffic from road tr	30/5/13								next to Recreational Park
Measuring Location D No. 00         Main of the content of the c		Measuring	Location I	D No. 06	Nether Ci	ılzean F	arm* (Fr	e field co	
$\begin{array}{ c c c c c c } \hline 11126 & 101116 & 1016 & 1016 & 1116 &$		11:05	11.20	15mins	58.5	47.8	61.4	71.6	Constant traffic
Average         55.8         47.0         61.2         -         In fields.           14:00         15:00         1hour         57.8         47.0         61.2         -         -           Measuring Location ID No. 06 – Nether Culzean Farm (Façade conditions)         14:00         15:00         1hour         57.6         46.3         61.1         67.7         Constant traffic from A77, sheep in fields and rookery           15:00         16:00         1hour         57.8         47.4         61.1         69.4         fields and rookery           16:00         17:00         1hour         57.8         47.4         61.1         -         constant traffic from A77, sheep in fields and rookery           16:00         17:00         1hour         57.8         47.2         61.1         -         -           06/06/13         Measuring Location ID No.07 – Kirklandhill Farm (Façade conditions)         -         -         60.1         -         -           10:15         11:15         1hour         45.5         28.4         47.1         66.4         Background noise from road linking B7023 and B7024.           11:15         12:15         1hour         45.5         27.8         44.9         70.8         Proz3 and B7024.           12:15<		12:05	12.20	15mins	57.6	46.2	60.9	71.1	from the A77, cattle
Measuring Location ID No. 06 – Nether Culzean Farm (Façade conditions)           14:00         15:00         1hour         57.6         46.3         61.1         67.7         Constant traffic from A77, sheep in fields and rookery crows with the trees.           15:00         16:00         1hour         57.8         47.4         61.1         69.4         from A77, sheep in fields and rookery crows with the trees.           16:00         17:00         1hour         57.7         47.2         61.1         -           06/06/13         Measuring Location ID No.07 – Kirklandhill Farm (Façade conditions)         -         60.1         -           10:15         11:15         1hour         45.5         28.4         47.1         66.4         Background noise from road traffic from road linking B7023 and B7024.           11:15         12:15         1hour         45.5         27.8         44.9         70.9           12:15         13:15         1 hour         46.0         28.8         44.2         70.8         bication was sheep which used water bath.           12:15         13:15         1 hour         46.0         28.8         45.4         -         bith.		12.00			55.8	47.0	61 2	-	in fields.
Inductioning Location is iter or induced earlies and and (regate condition)           14:00         15:00         1hour         57.6         46.3         61.1         67.7         Constant traffic from A77, sheep in fields and rookery crows with the trees.           16:00         17:00         1hour         57.8         47.4         61.1         69.4         fields and rookery crows with the trees.           Average         57.7         47.2         61.1         -         -         60.1         -           06/06/13         Measuring Location ID No.07 - Kirklandhill Farm (Façade conditions)         -         60.1         -         -           10:15         11:15         1hour         45.5         28.4         47.1         66.4         Background noise from road traffic from road linking B7023 and B7024.           11:15         12:15         1hour         45.5         27.8         44.9         70.9         Across from survey location was sheep which used water bath.           12:15         13:15         1 hour         46.0         28.8         44.2         70.8         Across from survey location was sheep which used water bath.		Measuring	Location I	D No. 06 -	Nether C	ulzean l	Farm (Fa	cade con	ditions)
11:00       10:00       11:00       10:00       10:00       10:01       01:11       from A77, sheep in fields and rookery crows with the fields and rookery crows with the trees.         16:00       17:00       1hour       57.8       47.2       61.1       -       -       crows with the trees.         06/06/13       Measuring Location ID No.07 - Kirklandhill Farm (Façade conditions)       -       -       60.1       -       -         10:15       11:15       1hour       45.5       28.4       47.1       66.4       Background noise from road traffic from road linking B7023 and B7024.         11:15       12:15       1hour       45.5       27.8       44.9       70.9       Across from survey location was sheep which used water bath.         12:15       13:15       1 hour       46.0       28.8       45.4       -       -       bath.		14·00	15.00		57.6	46.3	61 1	67.7	Constant traffic
10:00       10:00       11001       37.3       47.4       01.1       03.4       fields and rookery crows with the trees.         16:00       17:00       1hour       57.8       47.8       61.2       71.1       crows with the trees.         Average       57.7       47.2       61.1       -       -       60.1       -         06/06/13       Measuring Location ID No.07 – Kirklandhill Farm (Façade conditions)       -       66.4       Background noise from road traffic from road traffic from road traffic from road linking B7023 and B7024.         11:15       12:15       1hour       45.5       27.8       44.9       70.9         Across from survey location was sheep       45.7       28.3       45.4       -       -         Lat0.18hr       -       -       -       44.4       -       -		15:00	16:00	1bour	57.8	40.0	61.1	60.4	from A77, sheep in
$\begin{array}{ c c c c c c c c c c c c c c c c c c c$		16:00	17:00	1hour	57.8	47.8	61.2	71 1	crows with the
LATOL         LATOL         OTH         THE         OTH		10.00		mour	57.7	47.0	61.1	-	trees.
06/06/13         Measuring Location ID No.07 - Kirklandhill Farm (Façade conditions)           10:15         11:15         1hour         45.5         28.4         47.1         66.4         Background noise from road traffic from road linking B7023 and B7024.           11:15         12:15         1hour         45.5         27.8         44.9         70.9         Across from survey location was sheep which used water bath.           LA10.18hr         -         -         44.4         -         -         44.4         -					-	-	60.1		
10:15         11:15         1hour         45.5         28.4         47.1         66.4         Background noise from road traffic from road linking B7023 and B7024.           11:15         12:15         1hour         45.5         27.8         44.9         70.9         Background noise from road linking B7023 and B7024.           12:15         13:15         1 hour         46.0         28.8         44.2         70.8         Across from survey location was sheep which used water bath.           LA10.18hr         -         -         -         44.4         -         -	06/06/13	Measuring		D No.07 – I	Kirklandh	nill Farm	(Facade	conditio	ns)
10:15       11:15       1hour       45.5       28.4       47.1       66.4       from road traffic from road linking B7023 and B7024.         11:15       12:15       1hour       45.5       27.8       44.9       70.9       B7023 and B7024.         12:15       13:15       1 hour       46.0       28.8       44.2       70.8       Across from survey location was sheep which used water bath.         LA10.18hr       -       -       44.4       -       -		<b>J</b>					( - 3		Background noise
11:15       12:15       1hour       45.5       27.8       44.9       70.9       B7023 and B7024.         12:15       13:15       1 hour       46.0       28.8       44.2       70.8       Across from survey location was sheep which used water bath.         LA10.18hr       -       -       44.4       -       -       44.4       -		10:15	11:15	1hour	45.5	28.4	47.1	66.4	from road traffic
12:1513:151 hour46.028.844.270.8Across from survey location was sheep which used water bath.Average45.728.345.4-Across from survey location was sheep which used water bath.		11:15	12:15	1hour	45.5	27.8	44.9	70.9	B7023 and B7024.
Average45.728.345.4-which used water bath.LA10,18hr44.4-		12:15	13:15	1 hour	46.0	28.8	44.2	70.8	Across from survey
L <sub>A10,18hr</sub> 44.4 - bath.			Average		45.7	28.3	45.4	-	which used water
			L <sub>A10,18hr</sub>		-	-	44.4	-	bath.

\*Survey was cancelled due to rainfall and battery issues.

Only two 15minute measurements over three consecutive hours were undertaken.



#### 4.2. Night time survey results

4.2.1. A consecutive 3 hour noise survey was undertaken 21<sup>st</sup> to 22<sup>nd</sup> May 2013 by Amey personnel. Meteorological conditions at the start of the noise survey were dry, calm, no wind, a cloud cover of 80% with a temperature of 7°C. The noise at the beginning of the survey was light traffic noise in the background from the A77. A north wind increased during the survey slightly to 0.2m/s.

Table 2:	Results o							
Date	Start Time	Stop Time	Elapsed Time	L <sub>Aeq</sub> (dB)	L <sub>AF90</sub> (dB)	L <sub>AF10</sub> (dB)	L <sub>AMAX</sub> (DB)	Comments/ Constraints
21/05/13 -	Measuring	Location 1	- Gardenr	ose Path				
22/05/13	<sup>1</sup> 23:30	00:00	30mins	36.6	19.2	31.9	65.1	Survey was stopped due to noise from cars idling at residential properties and shouting. Continued on new project for further 30mins
	<sup>2</sup> 00:00	00:30	30mins	26.2	19.7	28.4	50.6	Light traffic noise
	*1+2 (1 Hour average)			34.0	19.5	30.2	65.1	from the A77 and Gardenrose Path.
	00:45	01:45	1 hour	29.2	22.2	32.2	51.5	
	02:00	03:00	1 hour	29.2	24.4	31.8	55.8	
		Average		30.4	22.0	31.4	-	
		L <sub>A10,18hr</sub>		-	-	29.4	-	

\* Logarithmic average



# **Appendix A**

# **Drawings**









## Key<sup>7</sup>

Noise N	Measurement Locations							
ML1	Gardenrose Path							
ML2	Burns Drive							
ML3	Cargliston House							
ML4	Low Grange Cottages							
ML5	16 Crosshill Road							
ML6	Netherculzean Farm							
ML7	Kirklandhill Farm							
	Existing A77							
	Proposed A77 Alignment							
	40 metre buffer							

Rev	Revision details	C	Chkd	Appd	Date	;
Drawn	:		Pre	limina	ſУ	
Design	:		For	comm	nent	$\checkmark$
Chkd:			For	tende	r	
Appd:			For	const	ruction	
Date:			As	constru	ucted	
			Oth	ner		





Project Name A77 Maybole Bypass

Drawing Title

Client

# Environmental Noise Survey Locations

Original Drawing Size :A1Dimensions :mScale :1:10,000Copyright © Amey

rignt © Amey

Drawing No 25000182/ENV/002 <sup>Rev</sup>



# **Appendix B**

# Site survey records

Project: Maybole Bypass Environmental Statement

Report: Noise Monitoring Report Form

1.1	1.1.2	0.00	Nois	e Mo	nitori	ng R	eport	Form	62613	
Date and	d Time:	6 <sup>th</sup> June	e 2013 10:	15 – 13	8:15			Projec	t: Maybol	e Bypass
Location			Kirklone				1	E DE		
Poreonn			Kirkland	iniii Far	m					
Feisonn	21		Nicola S	Sim, He	ather At	ther				
SLM Typ	e/Serial	No.	B & K T 271777	ype 225 5	50/	· 0	Calibrato Type/Ser	or ial No.	B&KT	ype 4231/ 2714830
	Weath	er cond	litions at s	tart of	Surve	y				
Wind spe	eed (m/s	5)	0 – 1m	/s <sup>-1</sup>		0	Cloud co	over:	10%	
Wind dire	ection					1	emp (°C	C):	13°C	
Calibratio beginnin	on at the g survey	e /	0.01 de	eviation	i from l	ast ( t	Calibration he end of survey	on at of	-0.04 dev	viation from last
Power C beginnin	heck at g		98% - 8	3hrs	ж. С	F	Power ch at the en aurvey	neck d of	69% 5hr	s 7mins
Description Kirklandh fields are Description Light traff chirping. Description Same as Facade loo	in of Nois on of Nois fic noise Sheep on of Nois above. cation?	age of Sh is with or cattle se Environ the action se Environ	rural setting grazing. Inment at Sta e road that ljacent field	g along rt of Su t links E ds. d of Sur	y Kirkla rvey 37023 : vey	and B7	Path jus 7024 coi	nnecting	g Kirklandl	he surrounding hill Path. Birds
i doddo io	Julioni									103
Constrain None	ts									
15211		- Alton alle	L HORS	June 1	Measu	remen	its	15.15.5	and the second	
Project No.	Start	Stop	Elapsed Time	L <sub>Aeq</sub> (dB)	L <sub>A90</sub> (dB)	L <sub>A10</sub> (dB)	L <sub>AMAX</sub> (dB)		Con	nments
44	10:15	11:15	1hr	45.5	28.4	47.1	66.4	Distar Two p Shee calling Car p Lamb back	nt traffic. E blanes ove p in fields' g. assed 48n escaped to field 53n	Firds chirping. Thead 28-29mins. drinking water and n 30s through fence then m, 58m and 59m.
45	11:15	12:15	1hr	45.5	27.8	44.9	70.9	birds bath.	calling. Sr	eep arinking from

Kirklandhill Farm – Day time

Maybole Bypass Environmental Statement

Report:

Noise Monitoring Report Form

								Car pass 49m 27s Chickens property Motorbik Kirkland Plane he between and 33m Plane ov Man wal	sed 3m 45s, 32m 05s, s and 57m 28s s clucking in next doors kes along the road linking hill Path. eard in the distance 16 and 17m, 28m 25s, n. verhead 44m, 46m 37s. king with dog 38m 12s
46	12:15	13:15	5 1hr	46.0	28.8	44.2	70.8	Plane ov 11m. Residen 30s Jet 16.44 Walkers Sheep c Car at no Sheep d Winds g	verhead 5m 58s, and t leaving driveway 10m 0 70.8dB talking 25m. alling. ext property 27 and 38m lrinking from water bath. usting to 2ms <sup>-1</sup>
								Тс	otal L <sub>A10,3hr</sub> – 45.4dB L <sub>A90,3hr</sub> – 22.0dB
Comme	Comments								
	Constant of		Nam	1e		Si	gnature	2	Date
Recorde	Recorded by		Nicola Sim		1	lucha	Sim		10.06.13
Checked by			Heather At	her	+(e	Heather Atte			10.06.13

### Kirklandhill Farm – Day time

Maybole Bypass Environmental Statement

Report: Noise Monitoring Report Form

Noise Monitoring Report Form													
Date and	d Time:	21 <sup>st</sup> /22 <sup>n</sup>	<sup>d</sup> May 201:	3 – 23:	30 - 03	3:00		Projec	t: Maybole Bypass				
Location			No. 16 0	Gardenr	ose Pa	th							
Personne	el		Nicola S	sim, Hea	ather At	her							
SLM Typ	e/Serial	No.	B & K T 2717775	ype 225 5	50/	C T	alibrato ype/Seri	r ial No.	B & K Type 4231/ 2714830				
ALC: U.S.	Weath	er cond	itions at s	tart of	Surve	y							
Wind spe	eed (m/s	s)	No wind	b		C	loud co	ver:	80%				
Wind dire	ection		N/A			T	emp (°C	C):	7°C				
Calibration beginnin	on at the g survey	9	-0.04	-0.04 Calibration at 0.07 the end of survey									
Power C beginnin	heck at g		100% - 8hrs 30mins at the end of survey										
The surv determin to the pro- Descriptic Gardens to the no (Garden) Descriptic Light traf	e the ba edicted on and Im rose Pa orthwest rose Prin on of Nois fic noise on of Nois	undertal aseline n outcome age of Sin th is with of the pr mary Scl se Enviror e from th se Enviror except w	ken in acco oise survey of the nois of the nois renin a reside roperties. T nool). Inment at Sta e A77. No	rdance ys for r se leve ential au The are rt of Sur wind a d of Sur ses to 0	e with the noise se ls. rea (two a is with rvey t the st vey 0.2m/s	o store thin a b	o Measu e recept y buildir us route	aremen ors. Thi ngs) wit e which ey. Bird	t Procedure within CRTN to is is to compare the existing th rural gazing fields located is in place for the school				
Facade lo	cation?								No				
Constrain None	ts		4				150 L						
	Trans.				Меаец	remen	is .						
Project No.	Start	Stop	Elapsed Time	L <sub>Aeq</sub> (dB)	L <sub>A90</sub> (dB)	L <sub>A10</sub> (dB)	L <sub>AMAX</sub> (dB)		Comments				
21	23:30	00:00	30mins	36.6	19.2	31.9	65.1	Car p Noise house Cows 2 Aer 12 – 2	assing 3mins 30secs. from residents at bins at the es. mooing. oplane overhead between 13 mins.				
23	00:00	00:30	30mins	26.2	19.7	28.4	50.6	3 cars Dog b Aerop	s passing. barking. blane overhead				

Gardenrose Path – Night Time

Maybole Bypass Environmental Statement

Report: Noise Monitoring Report Form

24	00:45	01:45	1hour	29.2	22.2	32.2	51.5	Wind increased to 0.2m/s with gusts up to 1.5m/s Trees and hedges rustling. Birds singing 12mins & 38mins			
25	02:00	03.00	mour	29.2	24.4	31.0	55.6	Traffic noise from the A77 Total L <sub>A10,3hr</sub> - <b>31.4 dB</b> L <sub>A90,3hr</sub> - <b>22.0dB</b>			
Comme	ents							-			
Per la companya	1.14	200	Nam	e		Si	gnature	e Date			
Recorde	Recorded by Nicola Sim					Thede	Sim	22.05.13			
Checke	Checked by		leather Ath	ner	He	rener	Att	22.05.13			

Project: Maybole Bypass Environmental Statement

Report: Noise Monitoring Report Form

		1	Noise	Moni	toring	g Rep	oort Fo	orm	1.1				
Date an	d Time:	29 <sup>th</sup> Ma	y 2013, 10:1	5 to 11	:15	Proje	ect: May	bole	Bypass				
Location	b.		Cargliston F	arm (D	ay)								
Personn	el		Nicola Sim,	Heather	Ather								
SLM Typ	e/Serial	No.	В & К Туре	2250/ 2	717775		Calibrato Type/Seri Io.	r ial	B & K T	ype 4231/ 2714830			
Weathe	r condit	ions at s	start of Surv	/ey			Start W						
Wind sp	eed (m/s	5)	1m/s			0	Cloud co	ver:	5%				
Wind dir	ection		NE			٦	emp (°C	C):	17°C				
Calibrati beginnin	on at the g survey	e /	0.01 devia	ation fror	m the la	st t	Calibration he end co survey	on at of	0.00 deviation from the				
Power C beginnin	heck at	42% 2hrs 53mins at the end of survey											
Purpose of the survey and relevant standards and guidelines													
Description Carglisto rural sett Level Met farm trace Description Birds cal Sheep b Rustling Description As above	ne the ba atcome of on of Site on Farm ting surr eter (SLI ck. on of Nois anging h of leave on of Nois e	is locate ounded l M) was lo E Enviror nooves o S.	olse surveys se levels. d adjacent to by open field ocated to the ment at Start n wooden pa	o the ro s. Farm e entran of Surve allet.	ad that n has g ce of th	links t eese, l ne farm	he B702 hens and n near ar	3 and 9 pigs 1 acce	B7024. in the pr	Area is set with a operty. The Sound lds just off the			
Facade lo	cation?									No			
Constrain	Constraints												
Drojoot			Flanced	IWIE	asure	nemus				and the second se			
No.	Start	Stop	Time	(dB)	(dB)	(dB)	(dB)		Co	omments			
34	3410:1510:3015mins45.136.248.761.3Plane overhead 2-4mins. Sheep banging on steel pallet Birds calling. Distant traffic on A77. Van and car passing on the B7024.												

Cargliston Farm – Day time

Maybole Bypass Environmental Statement

Report:

Noise Monitoring Report Form

							-	Sheep calling 10m 40s. Gulls flying overhead 12m. Pigs grunting 14m.
35	10:30	10:45	15mins	44.8	36.5	47.8	60.8	Distant traffic from B7024 Sheep and birds calling. Plane overhead (in the distance) 9m. Car passing 10mins. Wind changed to between 1 -2 ms <sup>-1</sup> with gusts up to 3ms <sup>-1</sup>
36	10:45	11:00	15mins	47.1	38.4	49.6	66.9	Birds calling. Plane in distance. Distant traffic B7024. Dog walker passed by. Sheep calling. Trees rustling. Wind 1-2ms <sup>-1</sup> with gusts up to 4.5ms <sup>-1</sup> .
37	11:00	11:15	15mins	49.9	35.8	48.2	66.0	Wind 0 -1ms <sup>-1</sup> with gusts up to 3ms <sup>-1</sup> Sheep calling. Pigs grunting. Birds calling. Plane overhead.
								Total L <sub>A10, 1hr</sub> .48.6 L <sub>A90, 1hr</sub> .36.7
Comme	ents							
			Name		5 - P + P	Sign	ature	Date
Recorde	Recorded by Nicola Sim				No	las	nh -	31/05/13
Checked	Checked by Heather Ather				+(eas	ther i	Attu	31/05/13

Project: Maybole Bypass Environmental Statement

Report: Noise Monitoring Report Form

1 Contraction			Nois	e Monit	oring	l Re	port Fo	orm						
Date an	d Time:	22 <sup>nd</sup> Ma	y 2013 12	;00 and	Pro	ject:	Maybole	Вура	ass	1				
16:00		1				2								
Location	1		40 Burns	Drive (Day	)									
Personn	el		Nicola Si	m, Heather	Ather									
SLM Typ	e/Serial	No.	В & К Ту	pe 2250/ 27	717775		Calibrator Type/Seri No.	r al	B & K T	ype 4231/ :	2714830			
Weather	r condit	ions at s	start of Su	irvey										
Wind sp	eed (m/s	5)	0.5m/s with Gusts of 3m/s Cloud cover: 339							33%				
Wind dir	ection		North				Temp (°C	;):	11 - 12°	С				
Calibrati	on at the	9	Project	Project	Proje	ect	Calibratic	on at	Project	Project	Project			
beginnin	g surve	/ (dB	28	30	32		the end o	of	28	30	32			
deviation	n from la	st)	0.02	-0.06	0.0	1	survey		-0.01	0.02	-0.01			
Power C	heck at		76%	62%	56%		Power ch	leck	66%	59%	51%			
beginnin	g		5hrs	4hrs	3hrs		at the end	end of 4hrs 4hrs			3hrs			
			41mins	35mins	52mi	2mins survey 37mins 10mins 3								
Description The mean along the Agricultu Description Description As above	on and Im asureme e B7023 iral fields on of Nois	age of Sit nt locatic Culzean s surrour se Environ se Environ	e n is locate Road. Fu d the hou ment at Sta ment at End	ed within a inther hous sing estate and starling d of Survey	new resing is de	eside curre ng.	ential area ently being	ı at 1r ı built	n from the behind th	e front faça e properti	ade es.			
Facade lo	cation?									No				
Constrain None	ts			Me	asuren	nent	2							
Project	-		Flancod				1	1						
No.	Start	Stop	Time	(dB)	(dB)	(dB)	) (dB)		Con	nments				
28	12:25	12:40	15mins	54.0	47.0	58.2	Noise from Construction site. Reversing vehicles beeping.58.267.067.0Construction vehicle movemer on site – 7mins 2 cars passed.							

40 Burns Drive – Day time

Maybole Bypass Environmental Statement

Report: Noise

Noise Monitoring Report Form

30	14:15	14:30	15mins	52.6	46.9	54.9	76.0	Banging from site. Helicopter overhead - 4m 15s Wind changed to gusts up to 3ms <sup>-1</sup>	
32	15:15	15:30	15mins	42.0	36.6	44.8	61.2	Car passing 30s, 1m Road traffic noise in the distance.	
				49.5	43.5	52.6	68.1	Total L <sub>A10,15mins</sub> -52.6 L <sub>A90, 15mins</sub> - 43.5	

	Name	Signature	Date
Recorded by	Nicola Sim	NucolaSim	31/05/13
Checked by	Heather Ather	Heather Atte	31/05/13

Project: Maybole Bypass Environmental Statement

Report: Noise Monitoring Report Form

and the second	13.14	1	Noise	Ivioni	toring	д кер	port F	orm					
Date an	d Time:	29 <sup>th</sup> May	/ 2013 13:4	5 and 1	4:15	Proje	ct: May	/bole Bypass					
Location			Low Grange	e Bunga	low (Da	iy)							
Personn	el		Nicola Sim,	Heathe	r Ather			-1					
SLM Typ	e/Serial	No.	B & K Type 2717775	2250/		Calil Type	orator e/Serial	No. B & K Type 4231/ 2714830					
Weathe	r condit	ions at s	start of Surv	/ey									
Wind sp	eed (m/s	5)	0- 1m/s wi 4m/s	th Gust	s of	Clou	id cover	: 30%					
Wind dir	ection		SE			Tem	p (°C):	19°C					
Calibrati beginnin	on at the g surve	e /	0.00 deviati	on from	last	Calil the e surv	oration a end of ey	at 0.00 deviation from last					
Power Check at beginning29% 2hrs 3minsPower check at the end of survey22% 36mins													
Purpose of	Purpose of the survey and relevant standards and guidelines												
Description Description The Low location fields. Description Constant Description As above	vey was the the ba itcome of on of Site Grange was 15r on of Nois theavy on of Nois e.	undertak aseline no of the nois Bungalo n from th se Environ	en in accord bise surveys se levels. bw is located e carriagewa ment at Start w from the A ment at End o	dance w for noi d to the ay edge of Surve	north e e. The a by ds calli	sitive re east of area is	Maybole located	e Town Centre. Measurement within a rural setting with grazing					
Feedala	antian 2												
Constrain	ts							NO					
Droinst			Elemand	Me	easure	ments							
Project No.	Start	Stop	Elapsed Time	L <sub>Aeq</sub> (dB)	L <sub>A90</sub> (dB)	L <sub>A10</sub> (dB)	L <sub>AMAX</sub> (dB)	Comments					
38	13:45	14:00	15mins	60.4	38.3	64.9	77.0	Traffic Noise, approximately 30cars in 15minutes and 5 HGVs. Cows calling					

Low Grange Bungalow

Maybole Bypass Environmental Statement

Report:

Noise Monitoring Report Form

39	14:00	14:15	15mins	59.0	38.9	63.6	78.3	Constant traffic noise approximately: Cars $-70$ Van $-10$ LGV $-1$ Bus $-1$ HGV $-3$ Wind increased to gusts of $4 - 5ms^{-1}$ , with 80% cloud cover.
		-					-	64.3 ـ <b>Total L<sub>A10, 30mins</sub></b> L <sub>A90 ,30mins</sub> 38.6
Comme	nts							8
and the second			Name		1	Sigi	nature	Date
Recorded by Nicola Sim			74	colas	Sim	31/05/13		
Checked by Heather Ather			-Hea	nener	det	31/05/13		

Project: Maybole Bypass Environmental Statement

Report: Noise Monitoring Report Form

Net all		12.23	Noise	Moni	toring	g Re	eport	Form			
Date and	d Time:	30th Ma	y 2013, 11:0	00 and		Pro	ject: N	laybole	Bypass		
Location			Netherculze	an Farr	n (Day)			- the state of the		in an	
Personne	el		Nicola Sim,	Heathe	r Ather						
SLM Typ	e/Serial	No.	В & К Туре	2250/ 2	2717775		Calibr Type/ No.	rator Serial	B & K Type 42	231/ 2714830	
Weather	condit	ions at s	start of Surv	ey	A N	1	1.5				
Wind spe	ed (m/s	5)	No wind			66%					
Wind dire	ection		-	1			Temp	<u>(°C):</u>	15°C	1	
beginnin	on at the g survey	e /	Project 41	F	Project 4	13	Calibration at the end of		Project 41	Project 43	
			0.03		0.00		surve	У	-0.01	0.00	
Power Check at     Project 41     Project 43     Power check     Project 41     Project 41										Project 43	
22% 1hr 23mins 12% 50mins survey 18% 1hr 45mins 8% 32mins											
Descriptio	on of Nois t road tra	e Enviror affic nois	nment at Start se from the A	of Surve	eep in f	fields	and b	irds call	ing.		
Descriptio	on of Nois	e Enviror	nment at End o	of Surve	У						
As above	Э.										
Facade lo	cation?								No		
Constrain	ts										
The Sou consecu No façac	nd Leve tive 3hrs le meas	l Meter ( 5. Theref urement	SLM) was ou ore survey w undertaken	ut of ba vas sus as owr	attery to pendeo ner was	und d. not i ment	ertake in for p	a third 1	5 minutes with on on private la	a nd.	
Project		01	Elapsed	LAng	LADO	LAI					
No.	Start	Stop	Time	(dB)	(dB)	(dB	(d)	B)	Comme	ents	
41	11:05	11:20	15mins	58.5	47.8	61.4	4 71	.6 Coi Tric	nstant traffic fro ckling of water f	om the A77. From the burn.	

Netherculzean Farm – Day time

Maybole Bypass Environmental Statement

Report: Noise Monitoring Report Form

								Bird and sheep calling 11m 30s.
42	12:05	12:20	15mins	57.6	46.2	60.9	71.1	Birds and cows calling. Traffic from the A77.
							÷.	Total L <sub>A10, 30mins</sub> .61.2 L <sub>A90, 30mins</sub> .47.0
Comme	ents							
			Name	Sec. Las	1 Aleren	Sign	ature	Date
Recorded by		Nicol	Nicola Sim			heola	Sin	31/05/13
Checke	d by	Heat	ner Ather		Hec	ether	Att	cer 31/05/13

Netherculzean Farm – Day time

Project: Maybole Bypass Environmental Statement

**Report:** Noise Monitoring Report Form

Noise Monitoring Report Form												
Date and	Time:	30 <sup>th</sup> May	y 2013, 10:00	) to 13	:00	Proj	ect: May	bole E	Bypass			
Location			16 Crosshill	Road (I	Day)			5				
Personne	el .		Nicola Sim.	Heathe	r Ather							
SLM Type	e/Serial	No.	В & К Туре 2	2250/ 2	717775		Calibrator Type/Seri No.	al	В & К Тур	be 42:	31/2714830	
Weather	conditi	ons at s	start of Surv	еу						1	1	
Wind spe	ed (m/s	)	0-1ms <sup>-1</sup> Gu	sts 2m	90%	-						
Wind dire	ection						Temp (°C	;):	14°C	°C		
Calibration beginning	on at the g survey	•	Project 40	F	Project 4	2	Calibratio the end o	n at f	Project 4	40	Project 42	
			-0.01		-0.01		survey	6.24	0.03		0.00	
Power Cl	neck at		Project 40	P	roject 4	12	Power ch	eck d of	Project	40	Project 42	
boginini	9		25% 1hr 47mins		22% 1ł 23mins	nr s	12% 50mins					
to the our Descriptio The Sour surround to the sur Descriptio Traffic no Birds call Descriptio Dog Trai	The survey was undertaken in accordance with the SDD Measurement Procedure within CRTN to determine the baseline noise surveys for noise sensitive receptors. This is to compare the existing to the outcome of the noise levels.           Description of Site           The Sound Level Meter (SLM) was located 1m from the façade of 16 Crosshill Road. The surrounding area is a residential area just off High Street, through Maybole Town Centre. Adjacent to the survey area is Glebe Recreational Park. There are two bus stops across from the park.           Description of Noise Environment at Start of Survey           Traffic noise from Crosshill Road and distant noise from the A77.           Birds calling.           Description of Noise Environment at End of Survey           Dog Trainers present in the Park.											
Constrain The Sour	ts nd Leve ive 3hrs	l Meter ( 5. Theref	SLM) was ou ore survey w	it of ba as sus	ittery to pendec	unde 1.	ertake a tł	nird 15	minutes	with a	a	
			per g	Me	easure	ment	S					
Project No.	Start	Stop	Elapsed Time	L <sub>Aeq</sub> (dB)	L <sub>A90</sub> (dB)	L <sub>A10</sub> (dB	) L <sub>AMAX</sub> ) (dB)		Con	nmer	nts	
40	10:20	10:35	15mins61.545.163.781.9Constant traffic from Crosshill Road. Car parking. Hiab passing 5m 40s									

16 Crosshill Road

Maybole Bypass Environmental Statement

Report:

Noise Monitoring Report Form

				-				Dog barking 9m 30s		
42	11:40	11:55	15mins	60.5	45.6	64.3	80.3	Constant traffic flow. Wind changed – gusts of 3ms <sup>-1</sup> Birds calling 6m		
								Total L <sub>A10, 30mins-</sub> 64.0 L <sub>A90,30mins-</sub> 45.4		
Comm	ents									
Name						Signa	ature	Date		
Recorded by		Nic	Nicola Sim			las	m	31/05/13		
Checked by		Hea	Heather Ather			her.	Att	n 31/05/13		

e 1

Maybole Bypass Environmental Statement

Report: Noise Monitoring Report Form

Noise Monitoring Report Form											
Date and	d Time:	6 <sup>th</sup> June	2013 14:0	00 – 17	2:00			Projec	t: Maybol	le Bypass	
Location	Location Netherculzean Farm										
Personne	el		Nicola Sim, Heather Ather								
SLM Typ	e/Serial	B & K T 2717775	B & K Type 2250/ 2717775			alibrato ype/Seri	r al No.	B & K T	ype 4231/ 2714830		
	Weath	er cond	itions at s	tart of	Surve	у					
Wind spe	No wind	k		C	loud co	ver:	0%				
Wind dire	ection	n N/A				Т	emp (°C	;):	19°C		
Calibration beginning	on at the g survey	-0.04 de last	-0.04 deviation from last				on at of	0.01 deviation from last			
Power C beginnin	heck at g	- 6.3	69% - 5	69% - 5hrs 7mins			ower ch t the end urvey	eck d of	43% 3hrs 10mins		
determine the baseline noise surveys for noise sensitive receptors. This is to compare the existing to the predicted outcome of the noise levels. Description and Image of Site Netherculzean Farm is located approximately 82m from the existing A77 carriageway surrounded by arable and grazing fields. The property is surrounded by the trees with a private path to the house. Description of Noise Environment at Start of Survey Constant traffic noise from the A77. No wind at the start of the survey. Rook calls from trees within private land.											
Same as	above.	1									
Facade lo	cation?									Yes	
Constraints None											
					Measu	remen	ts				
Project No.	Start	Stop	Elapsed Time	L <sub>Aeq</sub> (dB)	L <sub>A90</sub> (dB)	L <sub>A10</sub> (dB)	L <sub>AMAX</sub> (dB)		Comments		
48	14:00	15:00	1hr	57.6	46.3	61.1	67.7	Traffi calling Quad Tract	c from the A77. Crows g between 40 and 56dB. I bike. for behind property in fields		
49	15:00	16:00	1hr	57.8	47.4	61.1	69.4	Traffi Plane Dog k Rook	Traffic from A77. Plane overhead 20mins 40secs Dog barking Rooks calling.		

Netherculzean Farm – Day Time

Project:

Maybole Bypass Environmental Statement

Report: Noise Monitoring Report Form

50 16:00 17:00		17:00	1hr	57.8	57.8 47.8		71.1	Traffic from A77 Rooks calling. Police car passing 11m 50s, 19m 30s and 31m 45s. Plane overhead 21m 45s Dog barking 32m.		
								Total L <sub>A10,3hr</sub> – dB = 61.1 L <sub>A90,3hr</sub> – dB = 47.2		
Comments										
1.1.1	12 265		1	S Grad	Nam	e	Sig	nature	Date	
Recorded by				Nico	Nicola Sim			dalim	10.06.13	
Checked by			Heat	Heather Ather			the ster	10.06.13		



# **Appendix C**

# **Calibration Certificates**



## CERTIFICATE OF CALIBRATION

Date of issue: 28 November 2012 Page 1 of 11 Certificate Number: C1209079



Morten Høngård Hanser

Approved Signatory

Brüel & Kjær

The Calibration Laboratory Skodsborgvej 307. DK-2850 Nærum, Denmark Tel: +45 45 800 500 Fax: +45 45 801 405 Email: ukservice@bksv.com

#### **CALIBRATION OF:**

Sound Level Meter:Brüel & Kjær Type 2250Microphone:Brüel & Kjær Type 4189Associated Calibrator:Brüel & Kjær Type 4231Calibrator Certificate:C1209029SLM Software Version:BZ7223 Version 3.5.3

No: 2717775 Id: -No: 2710690 No: 2714830

Calibrator Level:

93.98 dB SPL

Date of calibration:

27 November 2012

#### **CUSTOMER:**

Amey OW Limited Precision House, McNeil Drive Eurocentral. Motherwell ML1 4UR Glasgow United Kingdom

Customer Ref: 2000193001

#### **CALIBRATION CONDITIONS:**

Preconditioning:12 hours at  $23^{\circ}C \pm 3^{\circ}C$ Environment conditions:Air Temperature: 23.0 °C, Air Pressure: 100.1 kPa, Relative Humidity: 49.0 %RH

#### **SPECIFICATIONS:**

The Sound Level Meter Brüel & Kjær Type 2250 has been calibrated in accordance with the requirements as specified in BS7580: Part 1: 1997.

#### **PROCEDURE:**

The measurements have been performed with the assistance of Brüel & Kjær Sound Level Meter Calibration System 3630 with application software type 7763 (version 4.7 - DB: 4.60) by using procedure 2250-4189.

#### **RESULTS:**

Unless otherwise stated herein, the reported uncertainty is based upon a standard uncertainty multiplied by a coverage factor k = 2, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with DANAK requirements. The uncertainties refer to the measured values only with no account being taken of the ability of the device under test to maintain its calibration.

#### Note: Calibration after repair/adjustment.

This certificate is issued in accordance with the laboratory accreditation requirements of DANAK. It provides traceability of measurement to recognised national standards, and to units of measurement realised at the National Physical Laboratory or other recognised national standards laboratories. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.





## CERTIFICATE OF CALIBRATION

#### CALIBRATION OF

Calibrator: <sup>1</sup>/<sub>2</sub> Inch adaptor: Brüel & Kjær Type 4231 Brüel & Kjær Type UC-0210

Pattern Approval:

None



Page 1 of 4

No: 2714830 Id: -

#### CUSTOMER

Amey OW Limited Precision House, McNeil Drive Eurocentral. Motherwell ML1 4UR Glasgow United Kingdom

### CALIBRATION CONDITIONS

Preconditioning:4 hours at 23°C ± 3°CEnvironment conditions:Pressure: 99.93 kPa. Humidity: 49 % RH. Temperature: 23.2 °C.

#### SPECIFICATIONS

The Calibrator Brüel & Kjær Type 4231 has been calibrated in accordance with the requirements as specified in IEC60942:2003 Annex B Class 1. The accreditation assures the traceability to the international units system SI.

#### PROCEDURE

The measurements have been performed with the assistance of Brüel & Kjær acoustic calibrator calibration application software Type 7794 (version 2.4) by using procedure P\_4231\_D04.

#### RESULTS

Calibration Mode: Calibration as received.

The reported expanded uncertainty is based on the standard uncertainty multiplied by a coverage factor k = 2 providing a level of confidence of approximately 95 %. The uncertainty evaluation has been carried out in accordance with EA-4/02 from elements originating from the standards, calibration method, effect of environmental conditions and any short time contribution from the device under calibration.

Date of calibration: 2012-11-27

inanne O waaren Susanne Nygaard

Calibration Technician

Date of issue: 2012-11-27

Erik Bruus

Approved Signatory

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