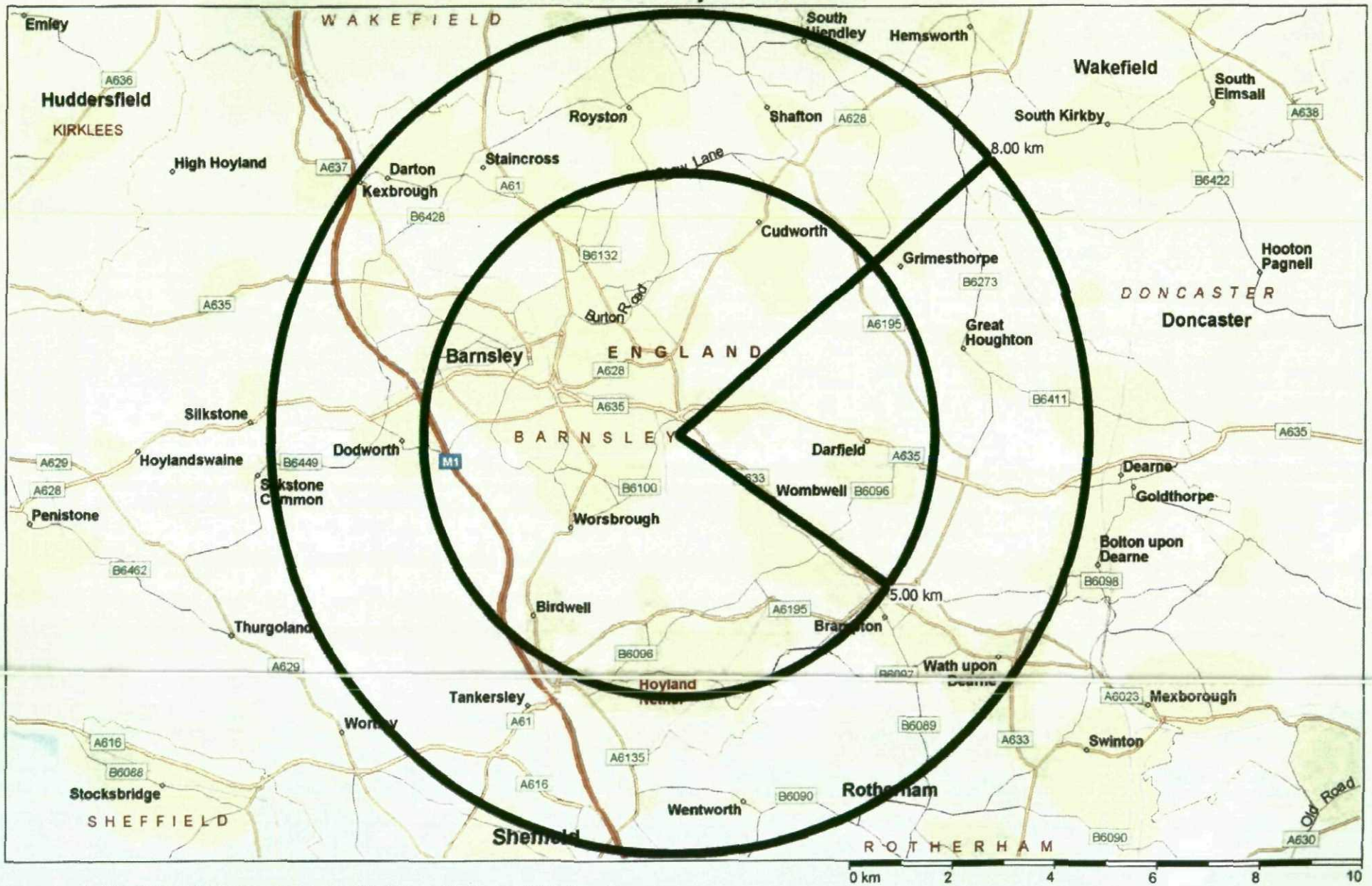
# APPENDIX BGH 5

# 5.0 and 8.0 km cycle catchment




Copyright © and (P) 1988–2006 Microsoft Corporation and/or its suppliers. All rights reserved. http://www.microsoft.com/autoroute/
Portions © 1990–2006 InstallShield Software Corporation. All rights reserved. Certain mapping and direction data © 2005 NAVTEQ. All rights reserved. NAVTEQ and NAVTEQ ON BOARD are trademarks of NAVTEQ. © Crown Copyright 2005. All rights reserved. License number 100025500

# APPENDIX BGH 6

**OFF-LINE VERSION** Bryan G Hall Suite E8 Leeds Licence No: 604801

**TRIP RATE CALCULATION SELECTION PARAMETERS:**

Land Use : 02 - EMPLOYMENT
Category : B - BUSINESS PARK
**VEHICLES**

*Selected regions and areas:*

| | | | |
|---|---|---|---|
| **02** | **SOUTH EAST** | | |
| | BU | BUCKINGHAMSHIRE | 1 days |
| | HC | HAMPSHIRE | 1 days |
| | HF | HERTFORDSHIRE | 1 days |
| | OX | OXFORDSHIRE | 1 days |
| **03** | **SOUTH WEST** | | |
| | DC | DORSET | 1 days |
| | WL | WILTSHIRE | 1 days |
| **04** | **EAST ANGLIA** | | |
| | NF | NORFOLK | 1 days |
| | SF | SUFFOLK | 1 days |
| **05** | **EAST MIDLANDS** | | |
| | LN | LINCOLNSHIRE | 1 days |
| | NT | NOTTINGHAMSHIRE | 1 days |
| **06** | **WEST MIDLANDS** | | |
| | SH | SHROPSHIRE | 1 days |
| | WM | WEST MIDLANDS | 1 days |
| | WO | WORCESTERSHIRE | 1 days |
| **07** | **YORKSHIRE & NORTH LINCOLNSHIRE** | | |
| | NO | NORTH LINCOLNSHIRE | 1 days |
| **08** | **NORTH WEST** | | |
| | GM | GREATER MANCHESTER | 1 days |
| **09** | **NORTH** | | |
| | TW | TYNE & WEAR | 4 days |
| **14** | **LEINSTER** | | |
| | WT | WESTMEATH | 1 days |

**OFF-LINE VERSION** Bryan G Hall Suite E8 Leeds Licence No: 604801

**Main parameter selection:**

| | |
|---|---|
| Parameter: | Gross floor area |
| Range: | 975 to 121275 (units: sqm) |
| Date Range: | 01/01/01 to 11/12/08 |

*Selected survey days:*

| | |
|---|---|
| Monday | 2 days |
| Tuesday | 6 days |
| Wednesday | 1 days |
| Thursday | 8 days |
| Friday | 3 days |

*Selected survey types:*

| | |
|---|---|
| Manual count | 20 days |
| Directional ATC Count | 0 days |

*Selected Locations:*

| | |
|---|---|
| Town Centre | 1 |
| Suburban Area (PPS6 Out of Centre) | 4 |
| Edge of Town | 15 |

*Selected Location Sub Categories:*

| | |
|---|---|
| Industrial Zone | 7 |
| Commercial Zone | 4 |
| Residential Zone | 2 |
| Retail Zone | 1 |
| Built-Up Zone | 2 |
| No Sub Category | 4 |

**OFF-LINE VERSION** Bryan G Hall Suite E8 Leeds Licence No: 604801

TRIP RATE for Land Use 02 - EMPLOYMENT/B - BUSINESS PARK

## VEHICLES

### Calculation factor: 100 sqm

**BOLD print indicates peak (busiest) period**

| Time Range | ARRIVALS | | | DEPARTURES | | | TOTALS | | |
|---|---|---|---|---|---|---|---|---|---|
| | No. Days | Ave. GFA | Trip Rate | No. Days | Ave. GFA | Trip Rate | No. Days | Ave. GFA | Trip Rate |
| 00:00 - 00:30 | 0 | 0 | 0.000 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 00:30 - 01:00 | 0 | 0 | 0.000 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 01:00 - 01:30 | 0 | 0 | 0.000 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 01:30 - 02:00 | 0 | 0 | 0.000 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 02:00 - 02:30 | 0 | 0 | 0.000 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 02:30 - 03:00 | 0 | 0 | 0.000 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 03:00 - 03:30 | 0 | 0 | 0.000 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 03:30 - 04:00 | 0 | 0 | 0.000 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 04:00 - 04:30 | 0 | 0 | 0.000 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 04:30 - 05:00 | 0 | 0 | 0.000 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 05:00 - 05:30 | 0 | 0 | 0.000 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 05:30 - 06:00 | 0 | 0 | 0.000 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 06:00 - 06:30 | 0 | 0 | 0.000 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 06:30 - 07:00 | 0 | 0 | 0.000 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 07:00 - 07:30 | 20 | 21873 | 0.153 | 20 | 21873 | 0.043 | 20 | 21873 | 0.196 |
| 07:30 - 08:00 | 20 | 21873 | 0.416 | 20 | 21873 | 0.085 | 20 | 21873 | 0.501 |
| 08:00 - 08:30 | 20 | 21873 | 0.621 | 20 | 21873 | 0.127 | 20 | 21873 | 0.748 |
| 08:30 - 09:00 | **20** | **21873** | **0.806** | 20 | 21873 | 0.148 | **20** | **21873** | **0.954** |
| 09:00 - 09:30 | 20 | 21873 | 0.479 | 20 | 21873 | 0.123 | 20 | 21873 | 0.602 |
| 09:30 - 10:00 | 20 | 21873 | 0.271 | 20 | 21873 | 0.117 | 20 | 21873 | 0.388 |
| 10:00 - 10:30 | 20 | 21873 | 0.156 | 20 | 21873 | 0.111 | 20 | 21873 | 0.267 |
| 10:30 - 11:00 | 20 | 21873 | 0.120 | 20 | 21873 | 0.109 | 20 | 21873 | 0.229 |
| 11:00 - 11:30 | 20 | 21873 | 0.122 | 20 | 21873 | 0.118 | 20 | 21873 | 0.240 |
| 11:30 - 12:00 | 20 | 21873 | 0.144 | 20 | 21873 | 0.133 | 20 | 21873 | 0.277 |
| 12:00 - 12:30 | 20 | 21873 | 0.150 | 20 | 21873 | 0.278 | 20 | 21873 | 0.428 |
| 12:30 - 13:00 | 20 | 21873 | 0.212 | 20 | 21873 | 0.227 | 20 | 21873 | 0.439 |
| 13:00 - 13:30 | 20 | 21873 | 0.243 | 20 | 21873 | 0.284 | 20 | 21873 | 0.527 |
| 13:30 - 14:00 | 20 | 21873 | 0.256 | 20 | 21873 | 0.173 | 20 | 21873 | 0.429 |
| 14:00 - 14:30 | 20 | 21873 | 0.131 | 20 | 21873 | 0.155 | 20 | 21873 | 0.286 |
| 14:30 - 15:00 | 20 | 21873 | 0.135 | 20 | 21873 | 0.165 | 20 | 21873 | 0.300 |
| 15:00 - 15:30 | 20 | 21873 | 0.120 | 20 | 21873 | 0.191 | 20 | 21873 | 0.311 |
| 15:30 - 16:00 | 20 | 21873 | 0.123 | 20 | 21873 | 0.219 | 20 | 21873 | 0.342 |
| 16:00 - 16:30 | 20 | 21873 | 0.108 | 20 | 21873 | 0.340 | 20 | 21873 | 0.448 |
| 16:30 - 17:00 | 20 | 21873 | 0.140 | 20 | 21873 | 0.453 | 20 | 21873 | 0.593 |
| 17:00 - 17:30 | 20 | 21873 | 0.111 | **20** | **21873** | **0.668** | 20 | 21873 | 0.779 |
| 17:30 - 18:00 | 20 | 21873 | 0.090 | 20 | 21873 | 0.500 | 20 | 21873 | 0.590 |
| 18:00 - 18:30 | 20 | 21873 | 0.063 | 20 | 21873 | 0.290 | 20 | 21873 | 0.353 |
| 18:30 - 19:00 | 20 | 21873 | 0.046 | 20 | 21873 | 0.136 | 20 | 21873 | 0.182 |
| 19:00 - 19:30 | 0 | 0 | 0.000 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 19:30 - 20:00 | 0 | 0 | 0.000 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 20:00 - 20:30 | 0 | 0 | 0.000 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 20:30 - 21:00 | 0 | 0 | 0.000 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 21:00 - 21:30 | 0 | 0 | 0.000 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 21:30 - 22:00 | 0 | 0 | 0.000 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 22:00 - 22:30 | 0 | 0 | 0.000 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 22:30 - 23:00 | 0 | 0 | 0.000 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 23:00 - 23:30 | 0 | 0 | 0.000 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 23:30 - 24:00 | 0 | 0 | 0.000 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| Total Rates: | | | 5.216 | | | 5.193 | | | 10.409 |

# APPENDIX BGH 7

OFF-LINE VERSION Bryan G Hall Suite E8 Leeds Licence No: 604801

**TRIP RATE CALCULATION SELECTION PARAMETERS:**

Land Use : 03 - RESIDENTIAL
*Category* : *A - HOUSES PRIVATELY OWNED*
**VEHICLES**

*Selected regions and areas:*

| | | | |
|---|---|---|---|
| **02** | **SOUTH EAST** | | |
| | EX | ESSEX | 1 days |
| **04** | **EAST ANGLIA** | | |
| | CA | CAMBRIDGESHIRE | 1 days |
| | SF | SUFFOLK | 1 days |
| **06** | **WEST MIDLANDS** | | |
| | WO | WORCESTERSHIRE | 2 days |
| **08** | **NORTH WEST** | | |
| | GM | GREATER MANCHESTER | 1 days |
| | MS | MERSEYSIDE | 1 days |
| **09** | **NORTH** | | |
| | TV | TEES VALLEY | 1 days |

**Main parameter selection:**

Parameter: Number of dwellings
Range: 201 to 400 (units: )

Date Range: 01/01/01 to 19/10/08

*Selected survey days:*

| | |
|---|---|
| Tuesday | 1 days |
| Thursday | 6 days |
| Friday | 1 days |

*Selected survey types:*

| | |
|---|---|
| Manual count | 8 days |
| Directional ATC Count | 0 days |

*Selected Locations:*

| | |
|---|---|
| Edge of Town Centre | 1 |
| Suburban Area (PPS6 Out of Centre) | 1 |
| Edge of Town | 5 |
| Neighbourhood Centre (PPS6 Local Centre) | 1 |

*Selected Location Sub Categories:*

| | |
|---|---|
| Residential Zone | 5 |
| No Sub Category | 3 |

**OFF-LINE VERSION** Bryan G Hall Suite E8 Leeds Licence No: 604801

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED

## VEHICLES

## Calculation factor: 1 DWELLS

***BOLD print indicates peak (busiest) period***

| Time Range | ARRIVALS | | | DEPARTURES | | | TOTALS | | |
|---|---|---|---|---|---|---|---|---|---|
| | No. Days | Ave. DWELLS | Trip Rate | No. Days | Ave. DWELLS | Trip Rate | No. Days | Ave. DWELLS | Trip Rate |
| 00:00 - 01:00 | 0 | 0 | 0.000 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 01:00 - 02:00 | 0 | 0 | 0.000 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 02:00 - 03:00 | 0 | 0 | 0.000 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 03:00 - 04:00 | 0 | 0 | 0.000 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 04:00 - 05:00 | 0 | 0 | 0.000 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 05:00 - 06:00 | 0 | 0 | 0.000 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 06:00 - 07:00 | 0 | 0 | 0.000 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 07:00 - 08:00 | 8 | 265 | 0.072 | 8 | 265 | 0.247 | 8 | 265 | 0.319 |
| 08:00 - 09:00 | 8 | 265 | 0.149 | **8** | **265** | **0.411** | 8 | 265 | 0.560 |
| 09:00 - 10:00 | 8 | 265 | 0.154 | 8 | 265 | 0.189 | 8 | 265 | 0.343 |
| 10:00 - 11:00 | 8 | 265 | 0.143 | 8 | 265 | 0.181 | 8 | 265 | 0.324 |
| 11:00 - 12:00 | 8 | 265 | 0.173 | 8 | 265 | 0.162 | 8 | 265 | 0.335 |
| 12:00 - 13:00 | 8 | 265 | 0.174 | 8 | 265 | 0.167 | 8 | 265 | 0.341 |
| 13:00 - 14:00 | 8 | 265 | 0.159 | 8 | 265 | 0.167 | 8 | 265 | 0.326 |
| 14:00 - 15:00 | 8 | 265 | 0.177 | 8 | 265 | 0.185 | 8 | 265 | 0.362 |
| 15:00 - 16:00 | 8 | 265 | 0.274 | 8 | 265 | 0.203 | 8 | 265 | 0.477 |
| 16:00 - 17:00 | 8 | 265 | 0.296 | 8 | 265 | 0.193 | 8 | 265 | 0.489 |
| 17:00 - 18:00 | **8** | **265** | **0.382** | 8 | 265 | 0.218 | **8** | **265** | **0.600** |
| 18:00 - 19:00 | 8 | 265 | 0.312 | 8 | 265 | 0.237 | 8 | 265 | 0.549 |
| 19:00 - 20:00 | 0 | 0 | 0.000 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 20:00 - 21:00 | 0 | 0 | 0.000 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 21:00 - 22:00 | 0 | 0 | 0.000 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 22:00 - 23:00 | 0 | 0 | 0.000 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| 23:00 - 24:00 | 0 | 0 | 0.000 | 0 | 0 | 0.000 | 0 | 0 | 0.000 |
| Total Rates: | | | 2.465 | | | 2.560 | | | 5.025 |

**Parameter summary**

| | |
|---|---|
| Trip rate parameter range selected: | 201 - 400 (units: ) |
| Survey date date range: | 01/01/01 - 19/10/08 |
| Number of weekdays (Monday-Friday): | 8 |
| Number of Saturdays: | 0 |
| Number of Sundays: | 0 |
| Optional parameters used in selection: | NO |
| Surveys manually removed from selection: | 8 |

# APPENDIX BGH 8

**Employment Trip Rates**

| | Trip Rate (Trips per 100 sq. m. GFA) | | | | Trips (Assuming 24,155 sq. m. GFA) | | |
|---|---|---|---|---|---|---|---|
| Time Period | Arrivals | Departures | Two Way Totals | | Arrivals | Departures | Two Way Totals |
| | | | | | | | |
| 00:00-01:00 | 0.000 | 0.000 | 0.000 | | 0 | 0 | 0 |
| 01:00-02:00 | 0.000 | 0.000 | 0.000 | | 0 | 0 | 0 |
| 02:00-03:00 | 0.000 | 0.000 | 0.000 | | 0 | 0 | 0 |
| 03:00-04:00 | 0.000 | 0.000 | 0.000 | | 0 | 0 | 0 |
| 04:00-05:00 | 0.000 | 0.000 | 0.000 | | 0 | 0 | 0 |
| 05:00-06:00 | 0.000 | 0.000 | 0.000 | | 0 | 0 | 0 |
| 06:00-07:00 | 0.000 | 0.000 | 0.000 | | 0 | 0 | 0 |
| 07:00-08:00 | 0.569 | 0.128 | 0.697 | | 137 | 30 | 167 |
| 08:00-09:00 | 1.427 | 0.275 | 1.702 | | 344 | 66 | 410 |
| 09:00-10:00 | 0.750 | 0.240 | 0.990 | | 181 | 57 | 238 |
| 10:00-11:00 | 0.276 | 0.220 | 0.496 | | 66 | 53 | 119 |
| 11:00-12:00 | 0.266 | 0.251 | 0.517 | | 64 | 60 | 124 |
| 12:00-13:00 | 0.362 | 0.505 | 0.867 | | 87 | 121 | 208 |
| 13:00-14:00 | 0.499 | 0.457 | 0.956 | | 120 | 110 | 230 |
| 14:00-15:00 | 0.266 | 0.320 | 0.586 | | 64 | 77 | 141 |
| 15:00-16:00 | 0.243 | 0.410 | 0.653 | | 58 | 99 | 157 |
| 16:00-17:00 | 0.248 | 0.793 | 1.041 | | 59 | 191 | 250 |
| 17:00-18:00 | 0.201 | 1.168 | 1.369 | | 48 | 282 | 330 |
| 18:00-19:00 | 0.109 | 0.426 | 0.535 | | 26 | 102 | 128 |
| 19:00-20:00 | 0.000 | 0.000 | 0.000 | | 0 | 0 | 0 |
| 20:00-21:00 | 0.000 | 0.000 | 0.000 | | 0 | 0 | 0 |
| 21:00-22:00 | 0.000 | 0.000 | 0.000 | | 0 | 0 | 0 |
| 22:00-23:00 | 0.000 | 0.000 | 0.000 | | 0 | 0 | 0 |
| 23:00-24:00 | 0.000 | 0.000 | 0.000 | | 0 | 0 | 0 |
| 24 Hour Total | 5.216 | 5.193 | 10.409 | | 1259 | 1254 | 2513 |

***Residential Trip Rates***

| | Trip Rate (Trips per dwelling) | | | | Trips (Assuming 272 dwelings) | | |
|---|---|---|---|---|---|---|---|
| Time Period | Arrivals | Departures | Two Way Totals | | Arrivals | Departures | Two Way Totals |
| | | | | | | | |
| 00:00-01:00 | 0.000 | 0.000 | 0.000 | | 0 | 0 | 0 |
| 01:00-02:00 | 0.000 | 0.000 | 0.000 | | 0 | 0 | 0 |
| 02:00-03:00 | 0.000 | 0.000 | 0.000 | | 0 | 0 | 0 |
| 03:00-04:00 | 0.000 | 0.000 | 0.000 | | 0 | 0 | 0 |
| 04:00-05:00 | 0.000 | 0.000 | 0.000 | | 0 | 0 | 0 |
| 05:00-06:00 | 0.000 | 0.000 | 0.000 | | 0 | 0 | 0 |
| 06:00-07:00 | 0.000 | 0.000 | 0.000 | | 0 | 0 | 0 |
| 07:00-08:00 | 0.072 | 0.247 | 0.319 | | 19 | 67 | 86 |
| 08:00-09:00 | 0.149 | 0.411 | 0.560 | | 40 | 111 | 151 |
| 09:00-10:00 | 0.154 | 0.189 | 0.343 | | 41 | 51 | 92 |
| 10:00-11:00 | 0.143 | 0.181 | 0.324 | | 38 | 49 | 87 |
| 11:00-12:00 | 0.173 | 0.162 | 0.335 | | 47 | 44 | 91 |
| 12:00-13:00 | 0.174 | 0.167 | 0.341 | | 47 | 45 | 92 |
| 13:00-14:00 | 0.159 | 0.167 | 0.326 | | 43 | 45 | 88 |
| 14:00-15:00 | 0.177 | 0.185 | 0.362 | | 48 | 50 | 98 |
| 15:00-16:00 | 0.274 | 0.203 | 0.477 | | 74 | 55 | 129 |
| 16:00-17:00 | 0.296 | 0.193 | 0.489 | | 80 | 52 | 132 |
| 17:00-18:00 | 0.382 | 0.218 | 0.600 | | 103 | 59 | 162 |
| 18:00-19:00 | 0.312 | 0.237 | 0.549 | | 84 | 64 | 148 |
| 19:00-20:00 | 0.000 | 0.000 | 0.000 | | 0 | 0 | 0 |
| 20:00-21:00 | 0.000 | 0.000 | 0.000 | | 0 | 0 | 0 |
| 21:00-22:00 | 0.000 | 0.000 | 0.000 | | 0 | 0 | 0 |
| 22:00-23:00 | 0.000 | 0.000 | 0.000 | | 0 | 0 | 0 |
| 23:00-24:00 | 0.000 | 0.000 | 0.000 | | 0 | 0 | 0 |
| 24 Hour Total | 2.465 | 2.560 | 5.025 | | 670 | 696 | 1366 |

# Appendix 4

**ARCADIS** TERENCE E. DUDLEY & ASSOCIATES
STRUCTURAL & CIVIL CONSULTING ENGINEERS

1 Whitehall Riverside Leeds LS1 4BN Tel: 0113 284 5300 Fax: 0113 284 5301

Ref: SC/08363

Stainsby Grange (Wombwell) Ltd
Park House
Beechwood Estate
Elmete Lane
Roundhay
Leeds
LS8 2LQ

14 May 2009

Dear Sirs,

**Re: Land off Bleachcroft Way, Stairfoot Barnsley**

We have now completed our study of the Air Quality Requirement of the above, together with our associate company Arcadis Geraghty and Miller can advise as follows:

I. The Site is not located in a position where air quality assessment is required under National Society for Clean Air (NSCA) 2006 recommendations.

II. Discussions have taken place with Barnsley Metropolitan Borough Council on the subject but no specific brief for a detailed study could be determined.

III. The site is currently designated for Industrial Development, whilst the proposed planning submission and potential use is for residential development.

IV. Estimated 18 hour and 24 hour traffic flows have been undertaken on the basis that 272 dwellings will occupy the site.

The calculations exhibit that the 272 dwellings are likely to develop 4% more traffic on Stairfoot Roundabout than is currently the situation; however the allocated/ permitted development use would by calculation generate 10% more traffic, which by any reasoning is significantly more.

Based on the above therefore we would conclude that:

a. The increase in pollution due to the proposed residential development is marginal (4%)

b. That the proposed development for residential occupation provides a cleaner, safer option than the currently present permission (4% increase as opposed to 10%).

We would also add that due to the distance of the development and its associated links, (A633 and A635) it is **not** considered that emissions from traffic using the roundabout will impact upon the development.

Yours faithfully,

S. Cockerham
For and on behalf of Arcadis Terence E. Dudley & Associates

14. MAY. 2009 8:12 AYH NO. 461 P. 1

# Appendix 5

S. & D. Garritt Ltd.

Noise & Vibration
Design & Consultancy

Vicarage Cottage, High Street, Wadworth, Doncaster DN11 9BG. Telephone & Fax: 01302 854303

# REPORT

of

# SOUND MEASUREMENTS AND RECOMMENDATIONS

at

# PROPOSED RESIDENTIAL DEVELOPMENT, LAND OFF BLEACHCROFT WAY, STAIRFOOT, BARNSLEY, SOUTH YORKS.

Date of measurements: 8th & 9th January 2009

Date of report: 18th March 2009

Prepared for: Stainsby Grange Ltd.,
Park House,
Beechwood Estate,
Elmete Lane,
Roundhay,
Leeds LS8 2LQ.

## CONTENTS


| | | |
|---|---|---|
| 1.0 | Summary and Conclusions | 3 |
| 2.0 | Planning Requirements on Noise | 4 |
| 2.1 | PPG24 "Planning & Noise" | 4 |
| 2.2 | Interior Sound Levels | 5 |
| 2.3 | BS 4142: 1997 | 5 |
| 3.0 | Sound Sources | 6 |
| 4.0 | Sound Measurements | 10 |
| 5.0 | Road and Rail Noise | 10 |
| 6.0 | Noise Exposure Categories | 13 |
| 7.0 | Sound Insulation to Outdoors | 14 |
| 8.0 | Hunningley Primary School | 20 |
| 9.0 | Allotments | 21 |
| 10.0 | G A Kelly Fruit Sales | 22 |
| 11.0 | Barnsley Food Supplies | 26 |
| 12.0 | B & Q Warehouse | 27 |
| 13.0 | Blakemore Wholesale Car Park & Hot Food Van | 28 |
| 14.0 | Tesco Supermarket | 29 |

## 1.0 Summary and Conclusions

An application is being submitted for residential development on land off Bleachcroft Way, Stairfoot, Barnsley. The site is bounded to the west by a railway line and to the north and east by retail and trade warehouse premises and for this reason the applicant has commissioned this survey of the existing sound levels at the sites. The report describes sound levels during periods of daytime and night and compares the results with guidance on the subject of noise affecting dwellings provided in PPG 24: 'Planning and Noise'.

1.1 The results show that the interior sound level recommendations of BS 8233 and the World Health Organisation can be achieved by the specification of glazing, ventilation and bedroom ceilings if this approach is acceptable to the LPA.

1.2 The outdoor sound levels during the daytime were in the range 57-60 dB $LA_{eq}$ adjacent to the railway boundary, 48-57 dB $LA_{eq}$ adjacent to Bleachcroft Way / Stairfoot Way and 41-49 dB $LA_{eq}$ across the rest of the site. At night the outdoor sound levels did not exceed 52 dB $LA_{eq}$ at any part of the site.

1.3 The results suggest that the site is in Noise Exposure Category A or B at all times of the day, with the exception of the part of the site adjacent to the railway line which is raised to Category C at night by the maximum sound levels from passing trains.

1.4 The areas of the site immediately adjacent to the boundaries with Bleachcroft Way, Stairfoot Way and the Tesco supermarket receive noise from commercial sources. The only practicable noise mitigation possibility appears to be the use of outdoor barriers to screen the proposed dwellings from industrial noise. After taking account of the sound reducing effects of 2m high boundary fences the worst of the commercial noise sources are rated by the method of BS 4142 up to 4 dB above the daytime background and 29 dB above the night background.

1.5 Complaints about noise during the daytime are not expected at any part of the site with the provision of noise barriers, but the outdoor noise levels in these areas adjacent to the commercial sources suggest that 'complaints are likely' at night. A possibility for mitigating the night noise levels would be to alter the proposed site layout so that only non-habitable rooms overlook the commercial sources, and so that the houses are built in one continuous block, thereby acting as barriers adjacent to the sources. It is suggested that discussion with the LPA on acceptance targets should take place as a first consideration.

## 2.0 Planning Requirements on Noise

Discussion has taken place with the Environmental Health Officer on the acceptance standards to be applied to this site. This report is based on the guidance of PPG24 and the British Standards to which it refers. A scheme of sound insulation is proposed to ensure the criteria quantified in these Standards which are summarised below.

## 2.1 PPG 24: 'Planning and Noise'

Guidance to local authorities on the considerations of noise affecting dwellings was issued in 1994 as Planning Policy Guidance 24: 'Planning and Noise'. Paragraphs 8, 9, 12 and Annexes 1, 2 & 3 deal specifically with noise from existing roads and mixed sources affecting dwellings. Four noise exposure categories are defined:

| Noise Source | Noise exposure category | | | |
|---|---|---|---|---|
| | A | B | C | D |
| **0700-2300 hours:** | | | | |
| road traffic/mixed | below 55 | 55-63 | 63-72 | above 72 |
| railways | below 55 | 55-66 | 66-74 | above 74 |
| **2300-0700 hours:** | | | | |
| road traffic/mixed | below 45 | 45-57 | 57-66 | above 66 |
| railways | below 45 | 45-59 | 59-66 | above 66 |

The noise quantities are assessed as dB $LA_{eq}$ over the full time periods defined above. The guidance given within each category is:

Category A: Noise need not be considered as a determining factor in granting planning permission, although the high end of the category should not be regarded as a desirable level.

Category B: Noise should be taken into account when determining planning applications and where appropriate conditions imposed to ensure an adequate level of protection.

Category C: Planning permission should not normally be granted. Where it is considered that permission should be given, for example because there are no alternative quieter sites available, conditions should be imposed to ensure a commensurate level of protection against noise.

Category D: Planning permission should normally be refused.

## 2.2 Interior Sound Levels

PPG 24 also refers to the recommendations on interior sound levels given in BS 8233 and to sleep disturbance factors.

**BS 8233: 1999**

| | | |
|---|---|---|
| living rooms | 30 dBA $L_{eq}$ | for good resting conditions |
| | 40 dBA $L_{eq}$ | for reasonable resting conditions |
| bedrooms | 30 dBA $L_{eq}$ | for good sleeping conditions |
| | 35 dBA $L_{eq}$ | for reasonable sleeping conditions |

**World Health Organisation: 2000**

| | | |
|---|---|---|
| Indoors generally | 35 dBA $L_{eq}$ | for speech intelligibility and moderate annoyance |
| Bedrooms | 30 dBA $L_{eq}$ } | to avoid sleep |
| | 45 dBA $L_{max}$ } | disturbance |

## 2.3 BS 4142: 1997

PPG24 refers to the use of BS 4142 for the assessment of noise from industrial or commercial premises. The method of BS 4142 is to measure outdoor sound levels at dwellings during emission of the industrial noise, measure the background level at the same location in the absence of the noise, and apply a correction factor to the measured levels for some specific factors which affect its acceptability (eg. whine, hiss, screech, hum, bangs, clicks, clatters, thumps, etc.). The corrected measured level (the rating level) is compared with the background from which it is concluded that:

- complaints are likely if the rating level exceeds the background by around +10 dB or more,
- a difference of around +5 dB is 'of marginal significance',
- a difference of more than 10 dB below the background is a positive indication that complaints are unlikely.

## 3.0 Sound Sources

The residential development is proposed on land off Bleachcroft Way and Stairfoot Way, Barnsley. The site is currently open grassland bordered to the west by an active railway line. To the north of the site are allotments, two food wholesale units, two office blocks, a B&Q store and two other retail stores. There is a 24-hour Tesco supermarket to the east of the site. Visits were made to all of the premises bordering the site as part of this survey during which we were advised of their activities and operating times by representatives of the various premises.

There are no main roads bordering the site, the only existing access being via Bleachcroft Way and Stairfoot Way which serve the commercial premises. Hunningley Primary School is situated 50m from the proposed development site at the opposite side of the railway line.

The dominant sound sources affecting the site are road traffic and commercial premises. The railway provides the maximum sound levels at the west side of the site but is secondary to other sources in terms of ambient $LA_{eq}$ sound levels across the site generally.

## 3.1 Hunningley Primary School

Hunningley Primary School is situated at the opposite side of the railway to the proposed development site. The school hours are 08.50-15.15 with lunchtime from 12.10-12.50. Morning and afternoon break times are 10.45-11.00 and 14.00-14.20. During break times childrens' voices could be heard and measured at the closest point of the development site to the school. The only audible sound from the school was from children playing; during class time no sound was heard from the school.

## 3.2 Allotments

Geese, hens and cockerels are kept at the adjacent allotments. During the survey periods occasional and sporadic noise was heard from the cockerels. During the night time visit a short burst of noise from a cockerel was measured at the development site.

## 3.3 G.A Kelly Fruit Sales

G.A Kelly are fruit wholesalers occupying the nearest industrial unit to the development site at the northern boundary. The premises is used for the wholesale of food at ambient temperatures so there is no refrigeration plant at the premises.

Deliveries are made at any time of day or night, often using articulated lorries. We were advised that some of the regular haulage operators have keys to the premises so that deliveries can be made at any time when the premises is not manned. Deliveries are made as stock is needed; there are no pre-set delivery times but we were advised that there are an average of three or four deliveries in any 24-hour period. Doors to the premises consist of electrically operated chain roller doors and wagons are unloaded using a fork lift truck.

The premises are open from 04.00-15.00 with the busiest time usually from 06.00-09.00.

A delivery to the premises by articulated lorry was observed and measured at 23.30 on the night of 8th January 2009. Normal operating sound was monitored during the daytime survey periods.

## 3.4 Barnsley Food Supplies

Barnsley Food Supplies are food wholesalers situated in the industrial units adjacent to G.A Kelly. The premises are open 09.00-18.00 on Mondays to Saturdays and 11.30-16.00 on Sundays.

The majority of vehicular movements are vans of the Mercedes-Benz Sprinter type. BFS occasionally use a fork lift truck and we were advised that they very occasionally have a delivery by articulated lorry, generally once every couple of months.

Some of the stock held by BFS is refrigerated and so there is an internal 'walk in' fridge inside the premises. Sound from the premises and in particular the fixed refrigeration plant was monitored during the daytime survey periods. There was no sound emitted from the premises at night.

There is a large skip for scrap cardboard situated in the car park of the industrial units. The skip is emptied by Barnsley Council during daytime periods.

3.5 **Office Units**

There are two new office units to the north of the site, adjacent to G.A Kelly and Barnsley Food Supplies. One of the units is empty and one is occupied by STML, a building control company. They operate from 07.00-17.30 on Mondays to Fridays. The offices are heated using an oil fired heating system and have no external plant. No sound was audible from the office units at any time during the survey periods.

3.6 **B & Q Store**

B&Q are open to the public from 07.00-21.00 six days per week and from 10.00-16.00 on Sundays. Activities at the store start daily at 06.00. The store is manned at night until 02.00.

Deliveries to the store occur from 07.00-17.00; we were advised that approximately five deliveries per day are received by this store. Most deliveries are made by articulated lorry and unloaded using a gas powered 'Jungheinrich' fork lift truck.

A PA system is used within the store during opening hours playing background music and store announcements. The tannoy is not used in the outdoor builders yard. There is no external HVAC plant; the store is heated and ventilated using internal fans and heaters

The only sound measurable at the development site from B&Q was noise associated with deliveries to the store. Sound levels during a delivery were monitored at midday on 9th January 2009. Any contribution from sound from customers in the car park of B&Q were included in the normal daytime monitoring periods; it was noted that these contributions were not loud enough to be measured separately.

3.7 **Blakemore Wholesale**

Blakemore Wholesale are food wholesalers open to the public between the following hours:

07.00 – 20.00 Monday & Thursday,
07.00 – 17.00 Tuesday, Wednesday & Friday
07.00 – 13.00 Saturday
09.00 – 13.00 Sunday

Deliveries to Blakemore are made by articulated lorry at the rear of the premises at the opposite side of the building to the proposed

development site, such that the site is shielded from delivery noise by the building itself. We were advised that there were usually 6-7 deliveries per day between Monday and Friday. Forklift trucks are used for loading and unloading.

A delivery took place during the daytime on 8th January 2009. The building acts as a noise barrier between the loading area and the proposed development site. Sound from the delivery was not measurable against the background sound level at the proposed development site.

There is no external plant at the Blakemore Wholesale premises. There is a hot food sales van which operates from the Blakemore car park. The van is powered by a small generator which was assessed by direct measurement. The van operates during the daytime only.

3.8 **Floors-2-Go**

Floors-2-Go are retailers of carpets, laminate and other floor coverings. They have no external plant and receive one delivery every few weeks. Their opening hours are 09.00-20.00 on Mondays to Fridays, 09.00-18.00 on Saturdays and 11.00-17.00 on Sundays.

No sound from the Floors-2-Go premises was audible at the proposed development site at any time during the survey periods.

3.9 **Tesco Supermarket**

Tesco are open to the public 24 hours per day on Mondays to Fridays, midnight-22.00 on Saturdays and 10.00-16.00 on Sundays.

All fixed plant for the store with the exception of an emergency generator is on the roof of the building. There is no access available to the roof and so direct measurement of the plant was not possible.

Deliveries are mainly made by articulated lorry. Exact numbers of deliveries vary from day to day, but typically Tesco receive up to ten deliveries per 24 hour period. On the days of the survey five deliveries were scheduled between 07.00-23.00 and a further three were scheduled between 23.00-07.00.

The delivery bays to the premises are in the elevation facing the proposed development site. Lorries are unloaded directly into the bays

either using a fork lift truck or wheeled off by hand if the products are delivered in cages. The delivery yard lies at a lower level than the area of the proposed development site immediately adjacent to it and is separated by the existing raised canal banks.

Sound levels from a non-refrigerated delivery were monitored by direct measurement at 22.30 on 8th January and a delivery of refrigerated goods was measured at 13.00 on 9th January 2009.

## 4.0 Sound Measurements

Sound levels were measured at the site during the following hours:

- 09.00 – 17.00 on 8th January 2009
- 22.00 – 03.45 on 8th/9th January 2009
- 10.00 – 17.30 on 9th January 2009

Due to the large size of the proposed development site and the numerous noise sources, the measurements of sound and their assessment to the relevant standards is divided into separate sections.

The microphone height for all measurements was 1.2m - 1.5m above ground level in each case. Conditions during all survey periods were dry with no wind, being suitable for outdoor sound readings. All results were taken using a Bruel & Kjaer precision sound level meter type 2260 for which current calibration certificates are held.

## 5.0 Road and Rail Noise

Measurements of road and rail noise were taken at the following positions and are identified on the plan at the end of this report:

1. Closest proposed dwellings to the railway line / west edge of site
2. Closest proposed dwellings to Bleachcroft Way / north edge of site
3. Closest proposed dwellings to Tesco / east edge of site
4. Site centre

### 5.1 Railway Line / West of Site

Measurements were taken 15m inside the site boundary at the approximate position of the closest proposed dwelling to the railway.

| Sound Descriptor | | 8th Jan 1300-1400 | 8th Jan 1530-1630 | 8th Jan 2200-2230 | 9th Jan 0140-0210 |
|---|---|---|---|---|---|
| Ambient | $LA_{eq}$ | 59.5 | 56.9 | 50.5 | 37.9 |
| Background | $LA_{90}$ | 43.0 | 43.2 | 33.4 | 32.7 |
| Maximum | $LA_{max}$ | 85.1 | 83.3 | 83.8 | 46.6 |

Sound frequency spectra are shown below of the highest results of day and night $L_{eq}$ and the night $L_{max}$ results:

Sound pressure levels dB linear:

| Frequency (Hz) | 63 | 125 | 250 | 500 | 1k | 2k | 4k | 8k |
|---|---|---|---|---|---|---|---|---|
| 13:00-14:00 Leq | 61.5 | 58.6 | 47.0 | 54.8 | 56.4 | 52.7 | 45.6 | 36.0 |
| 22:00-22:30 Leq | 54.4 | 51.4 | 37.4 | 45.5 | 45.6 | 44.9 | 37.5 | 28.3 |
| 22:00-22:30 Lmax | 83.2 | 85.8 | 67.6 | 77.9 | 81.6 | 76.5 | 68.9 | 62.2 |

## 5.2 Bleachcroft Way / Stairfoot Way

| Sound Descriptor | | 8th Jan 1015-1030 | 8th Jan 1400-1445 | 8th Jan 1630-1730 | 8th Jan 2330-0010 | 9th Jan 0210-0240 |
|---|---|---|---|---|---|---|
| Ambient | $LA_{eq}$ | 47.8 | 57.3 | 54.7 | 52.3 | 36.4 |
| Background | $LA_{90}$ | 43.2 | 43.4 | 43.4 | 35.2 | 33.0 |
| Maximum | $LA_{max}$ | 68.5 | 68.2 | 64.2 | 75.5 | 44.3 |

The highest sound level at this position at night was caused by deliveries to G.A. Kelly Food Supplies. The night time dBA $L_{max}$ and dBA $L_{eq}$ figures given above and the dB $L_{max}$ spectra given below include the passage of the articulated lorry measured during the delivery to G.A. Kelly on the night of 8th January.

The daytime measurement taken between 10.15 and 10.30 included a period of noticeably increased activity from G.A. Kelly. Road traffic was noted to be very light during this period such that G.A. Kelly were the dominant source during this period. During the other periods 1400-1445 and 1630-1730 road traffic was the dominant source.

Sound frequency spectra are shown overleaf of the highest results of day and night $L_{eq}$ and the highest $L_{max}$ results.

Sound pressure levels dB linear:

| Frequency (Hz) | 63 | 125 | 250 | 500 | 1k | 2k | 4k | 8k |
|---|---|---|---|---|---|---|---|---|
| 14:00-14:45 Leq | 66.3 | 57.4 | 52.0 | 52.7 | 54.2 | 49.8 | 42.3 | 34.7 |
| 23:30 - 00:10 Leq | 56.4 | 50.6 | 48.7 | 46.6 | 48.7 | 45.6 | 39.9 | 32.2 |
| 23:30 - 00:10 Lmax | 79.5 | 77.1 | 76.4 | 73.0 | 74.2 | 69.5 | 67.6 | 66.5 |

## 5.3 Boundary with Tesco / East of Site

| Sound Descriptor | | 8th Jan 1535-1635 | 9th Jan 1300-1330 | 1430-1530 | 9th Jan 2230-2310 |
|---|---|---|---|---|---|
| Ambient | $LA_{eq}$ | 46.9 | 48.5 | 45.8 | 47.2 |
| Background | $LA_{90}$ | 44.2 | 41.4 | 42.0 | 42.6 |
| Maximum | $LA_{max}$ | 65.1 | 69.6 | 67.3 | 62.5 |

Sound frequency spectra are shown below of the highest results of day and night $L_{eq}$ and the highest $L_{max}$ results. The highest sound level at this position is caused by deliveries to Tesco. The night time levels and the daytime levels from 1300-1330 include a full delivery to Tesco and so it is thought to represent the likely worst-case situation.

Sound pressure levels dB linear:

| Frequency (Hz) | 63 | 125 | 250 | 500 | 1k | 2k | 4k | 8k |
|---|---|---|---|---|---|---|---|---|
| 13:00-13:30 Leq | 57.3 | 49.6 | 49.7 | 44.6 | 44.2 | 38.6 | 32.4 | 29.6 |
| 22:30-23:10 Leq | 55.4 | 48.3 | 46.4 | 44.9 | 43.2 | 37.3 | 31.9 | 30.4 |
| 22:30-23:10 Lmax | 73.0 | 63.3 | 63.2 | 63.1 | 65.6 | 56.6 | 55.2 | 52.3 |

## 5.4 Site Centre

| Sound Descriptor | | 9th Jan 1330-1430 | 9th Jan 0040-0140 |
|---|---|---|---|
| Ambient | $LA_{eq}$ | 40.9 | 37.8 |
| Background | $LA_{90}$ | 38.4 | 35.0 |
| Maximum | $LA_{max}$ | 53.8 | 50.8 |

Sound frequency spectra are shown below of the highest results of day and night $L_{eq}$ and the highest $L_{max}$ results.

Sound pressure levels dB linear:

| Frequency (Hz) | 63 | 125 | 250 | 500 | 1k | 2k | 4k | 8k |
|---|---|---|---|---|---|---|---|---|
| 13:30-14:30 Leq | 54.8 | 42.8 | 29.6 | 33.9 | 38.1 | 32.7 | 27.7 | 23.3 |
| 00:40-01:40 Leq | 49.5 | 39.2 | 30.2 | 33.7 | 35.5 | 27.5 | 20.4 | 12.6 |
| 00:40 - 01:40 Lmax | 57.2 | 46.8 | 40.3 | 45.9 | 44.7 | 45.6 | 47.0 | 39.9 |

## 6.0 Noise Exposure Categories

PPG24 states that if there are regular maximum levels of 82 dBA $L_{max}$ or higher during the night from the passage of trains then the Noise Exposure Category is raised to C. It was found that this was the case at dwellings proposed closest to the railway line. Trains pass the site regularly into the night causing sound levels of 78-85 dBA $L_{max}$. The measured dBA $L_{eq}$ sound levels and the night time maximum criteria yield the following Noise Exposure Categories:

| Area of Site | Sound Level (dBA) | | Noise Exposure Cat. | |
|---|---|---|---|---|
| | Daytime | Night | Daytime | Night |
| Railway Boundary | 57-60 | 38-51 | B | C |
| Bleachcroft Way | 48-57 | 36-52 | A / B | A / B |
| Tesco Boundary | 47-49 | 46-47 | A | B |
| Site centre | 41 | 38 | A | A |

The results suggest that the site is in Noise Exposure Category A or Category B at all times of the day, with the exception of the part of the site close to the railway line which is raised to Category C by the maximum sound levels from passing trains. It is estimated that 15 of the proposed 272 dwellings will be exposed to maximum train levels sufficient for the NEC to be elevated to Category C at night. The affected plots are shown on a plan at the end of this report.