



## **Assessment of External Amenity Areas Sound Levels 24 New Build Apartments**

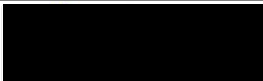

37 Broadwater Road  
Welwyn Garden City  
AL7 3AX

Client:

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## 1 Executive Summary

Planning permission had been granted by Welwyn Hatfield Borough Council for the redevelopment of the form office building at 37 Broadwater Road into a building consisting of 24 two-bedroom apartment (planning reference 6/2016/297/MAJ) subject to Conditions. No. 8 referred to noise and stated;

*No development shall take place until the glazed balustrade/screen details have been submitted. The details should demonstrate that the necessary noise levels for the external amenity areas are in compliance with the noise requirements under BS8233:2014 and the resultant noise levels within the external amenity areas (balconies and roof top communal area) would not exceed the  $L_{Aeq,T} 55dB$ . Once these details have been agreed they shall be implemented in accordance with these details and shall be in place before the first occupation of the flats and shall be retained in that form thereafter.*

It has now been proposed that the existing office building which was to be converted should be knocked down and an entirely new building constructed, with a fresh planning application being made to by Welwyn Hatfield Borough Council for “Construction of new build of 22 x 2 Bedroom and 2 x 3 Bedroom residential apartments with balconies and a roof garden. Layout of 26 car parking spaces, cycle parking, refuse store, internal access routes, landscaping and supporting infrastructure” under application reference 6/2018/2387/MAJ.

The new proposed building will be the exact same in terms of location, appearance, size, number of apartments etc as the permitted conversion of the existing building.

This report has been commission by Solai Holdings Limited and sets out measured sound levels at the front and rear of the existing office building, on the site, over a 24-hour period. Levels were highest at the front of the site, overlooking Broadwater Road, but at a level of only 63 dB  $L_{Aeq,day}$  free due to the low (30 mph speed limit) traffic speeds . Levels at the rear were 5 dB quieter.

The proposed development has two 3<sup>rd</sup> floor external “relax areas” and three private balconies, these will be protected by solid, continuous glass screens to a height of 1600mm, which will provide a substantial level of attenuation of the occupants sat in these areas. Day time external levels of no more than 47 dB  $L_{Aeq,day}$  have been predicted here.

There is one plot on the first and second floor that will have external balconies on the front façade of the building and these will maintain a balcony screen height of 1600mm, all other balconies will be the standard 100mm height.

The highest sound level for these will be 51 dB  $L_{Aeq,day}$  (plot 16), exposure levels on the other balconies down the northern facade of the building and at the rear will be less than this.

It has therefore been demonstrated that the design of the balconies has been sufficient to ensure external amenity day time sound levels will be limited to no more than 55 dB  $L_{Aeq,day}$  as required by Condition No. 8 of the previous planning approval for the conversion.

## 2 Introduction

Planning permission has been granted by Welwyn Hatfield Borough Council for the construction of “Change of use of an office building to form 24 x 2 bedroom residential apartments with balconies, the construction of an additional two storeys and a four storey side and rear extension with roof garden, layout of 26 car parking spaces and cycle parking, internal access routes, landscaping and supporting infrastructure” at 37 Broadwater Road, Welwyn AL7 3AX (planning reference 6/2016/297/MAJ ), the building to consist of 24 apartments on two floors with roof garden and external balconies.

The Condition No. 8 of the planning consent states;

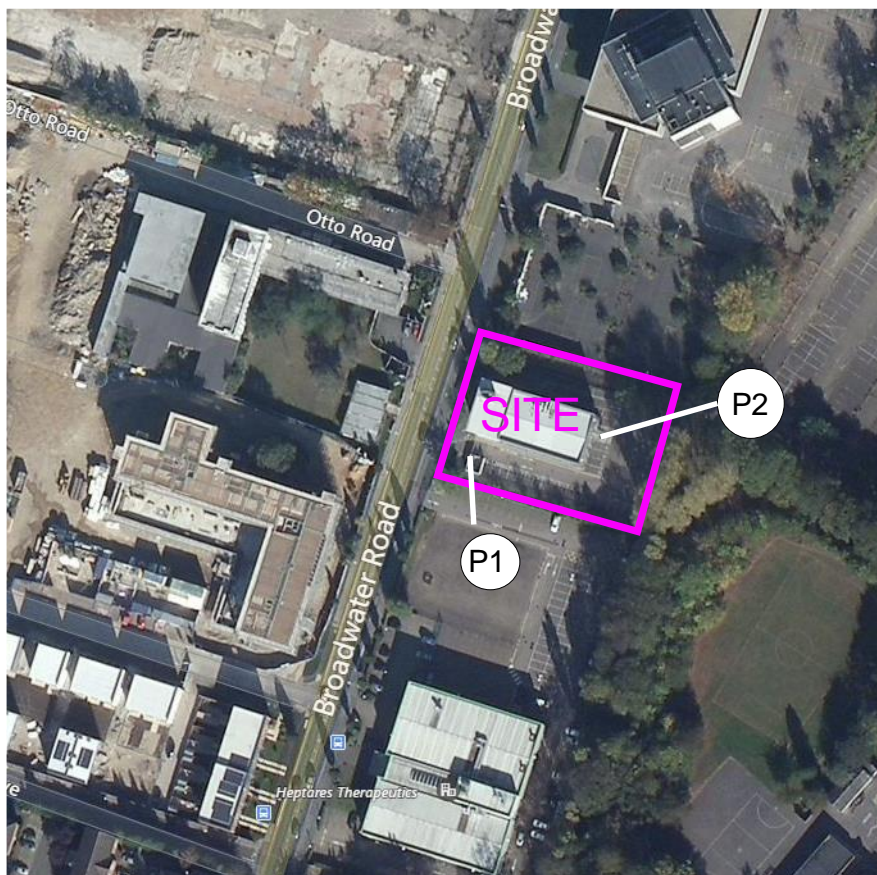
*No development shall take place until the glazed balustrade/screen details have been submitted. The details should demonstrate that the necessary noise levels for the external amenity areas are in compliance with the noise requirements under BS8233:2014 and the resultant noise levels within the external amenity areas (balconies and roof top communal area) would not exceed the LAeq,T 55dB. Once these details have been agreed they shall be implemented in accordance with these details and shall be in place before the first occupation of the flats and shall be retained in that form thereafter.*

The proposal is now to replace the existing office building with a new building, exactly same in terms of location, appearance, size, number of apartments etc as the permitted conversion of the existing building, however this requires a fresh planning application for the “Construction of new build of 22 x 2 Bedroom and 2 x 3 Bedroom residential apartments with balconies and a roof garden. Layout of 26 car parking spaces, cycle parking, refuse store, internal access routes, landscaping and supporting infrastructure” under a new application reference 6/2018/2387/MAJ.

Solai Holdings Limited has appointed Acoustic Associates SW Ltd to carry out a site sound survey and prepare a mitigation scheme sufficient to control external amenity sound levels to those set out in BS8233, as required by the previous Condition No. 8.

### 3 Environmental Sound Levels

The aerial view below shows the site and its proximity to Broadway Road to the front which has a 30 mph speed limit;



A site sound survey was carried out from Monday 29<sup>th</sup> to Tuesday 30<sup>th</sup> January 2018. The site was vacant and had a solid 2.4m high fence running along the pavement. At the time of setting up and collecting the two sound level meters (location shown as P1 and P2 above) the soundscape was made up of the sound of traffic moving on Broadwater Road and some demolition activity sound from the large former Weetabix factory to the north.

The photograph below shows the microphone at the front of the site (P1) at a height of approximately 3.5m from where there was a direct line of sight over the solid site hoarding on top the road;



A second meter was located at the rear of the former office building on the first floor fire exit, at a height of approximately 5m, as shown in the photograph below;



Each meter was calibrated before and after the survey without any adverse variants being observed. Details of the equipment used are given in the table below;

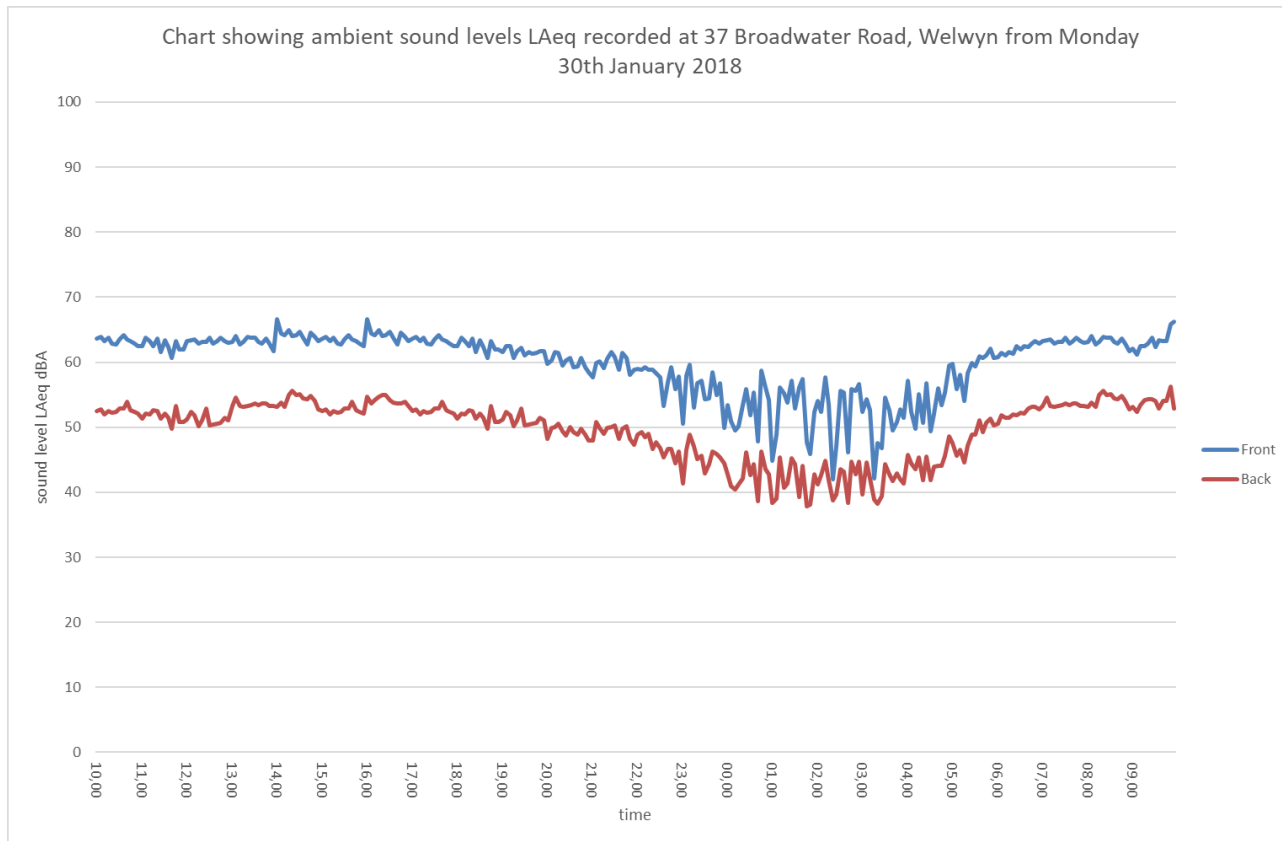
Make	Model	Serial No.	Calibration No.	Cert	Re-calibration due
Rion	NL31	00583286	1603119		2-3-18
Rion	NL31	012730381	1603115		15-2-18
Rion	NC74	34794316	TRAC17/04089		5-5-18



Both meters were set to record noise parameters over repetitive 5 minute periods.

The weather during the survey was clear and fine with little wind and suitable for repeatable environmental sound measurement<sup>1</sup>.

The chart over page shows the  $L_{Aeq}$  levels recorded;



This chart makes it clear that sound levels were higher on the western boundary overlooking Broadwater Road than the rear. The sound levels are summarised in the table below;

Period	Front	Back
	$L_{Aeq,T}$	$L_{Aeq,T}$
day 7am to 11pm	63	52
night 11pm to 7am	57	47

## 4 Assessment of external sound levels

The level of sound incident on the facades of the new dwellings can be estimated using Wolfe IMMI 3-D computer noise modelling software, which implements the calculation procedures set out in ISO

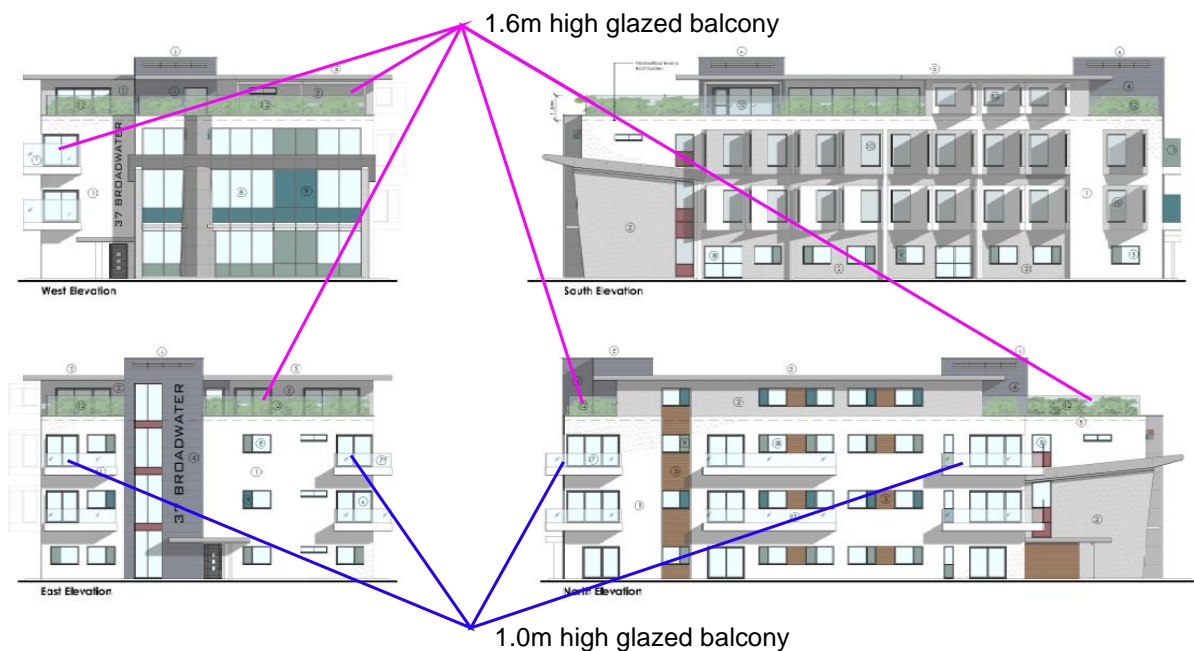
<sup>1</sup>[https://www.wunderground.com/history/airport/EGGW/2018/1/29/DailyHistory.html?req\\_city=EGGW&req\\_state=CBF&req\\_statename=United+Kingdom&reqdb.zip=00000&reqdb.magic=115&reqdb.wmo=03673](https://www.wunderground.com/history/airport/EGGW/2018/1/29/DailyHistory.html?req_city=EGGW&req_state=CBF&req_statename=United+Kingdom&reqdb.zip=00000&reqdb.magic=115&reqdb.wmo=03673)

9613-2:1996 (Acoustics - Attenuation of sound during propagation outdoors - Part 2: General method of calculation). As well as the amendment contained within ISO/TR 17534-3:2015 (Acoustics - Software for the calculation of sound outdoors - Part 3: Recommendations for quality assured implementation of ISO 9613-2 in software according to ISO 17534-1).

The following modelling assumptions have been relied upon;

- $G = 0.0$  (hard ground outside the site)
- Air temperature  $10^{\circ}\text{C}$ ,
- Humidity 70%,
- Downwind propagation,
- Receiver height on external amenity/balcony areas 1.2m (seated),
- traffic on Broadwater Road modelled as a line source 0.5m high and on centre line of carriageway,
- The general arrangement is shown on Stdio11 Architecture 's drawing No. 1583-200C, 201C, 202B (copies at the rear of this report),

An extract of the elevation drawing is shown below along with the glazed balcony heights;



The image below shows the view of apartments looking from the south west;



View NorthEast



The image below shows the view of the apartments from the north west;

View SouthEast



The table shows the predicted day time sound level on the Relax areas on the roof and higher level balconies where sound levels from the road will be at their greatest.

Location	Day time L <sub>Aeq,T</sub> dB
Relax Area Front (3rd flr)	47
Plot 22 Balcony (2nd flr)	47
Relax Area Middle (3rd flr)	45
Plot 23 Balcony	42
Plot 24 Balcony	42
Plot 16 Balcony	51
Plot 17 Balcony	47
Plot 18 Balcony	46

The IMMI 3D acoustic model can full acoustic calculation can be shared on request.

This table shows that sound levels will be at their highest on the 2<sup>nd</sup> floor balcony of Plot 24 overlooking Broadwater Road, where the glass balcony will be 1.6m high, facing the road and 1m high on its other sides.

The predicted external amenity/balcony sound levels can therefore be seen to be better than the 55 dB L<sub>Aeq,T</sub> required by Condition No. 8 of the previous planning consent.

The image displays two architectural floor plans for a building, labeled 'Second floor' and 'Third floor'. The plans are oriented vertically on the page. The 'Second floor' plan shows a grid of rooms, including offices, meeting rooms, and a central corridor. The 'Third floor' plan shows a similar grid of rooms, but with a large outdoor area and a central courtyard. A north arrow and a scale bar are located at the bottom right of the plans.

**Second floor**

**Third floor**

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 110 111 112 113 114 115 116 117 118 119 120 121 122 123 124 125 126 127 128 129 130 131 132 133 134 135 136 137 138 139 140 141 142 143 144 145 146 147 148 149 150 151 152 153 154 155 156 157 158 159 160 161 162 163 164 165 166 167 168 169 170 171 172 173 174 175 176 177 178 179 180 181 182 183 184 185 186 187 188 189 190 191 192 193 194 195 196 197 198 199 200 201 202 203 204 205 206 207 208 209 210 211 212 213 214 215 216 217 218 219 220 221 222 223 224 225 226 227 228 229 230 231 232 233 234 235 236 237 238 239 240 241 242 243 244 245 246 247 248 249 250 251 252 253 254 255 256 257 258 259 260 261 262 263 264 265 266 267 268 269 270 271 272 273 274 275 276 277 278 279 280 281 282 283 284 285 286 287 288 289 290 291 292 293 294 295 296 297 298 299 300 301 302 303 304 305 306 307 308 309 310 311 312 313 314 315 316 317 318 319 320 321 322 323 324 325 326 327 328 329 330 331 332 333 334 335 336 337 338 339 340 341 342 343 344 345 346 347 348 349 350 351 352 353 354 355 356 357 358 359 360 361 362 363 364 365 366 367 368 369 370 371 372 373 374 375 376 377 378 379 380 381 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410 411 412 413 414 415 416 417 418 419 420 421 422 423 424 425 426 427 428 429 430 431 432 433 434 435 436 437 438 439 440 441 442 443 444 445 446 447 448 449 450 451 452 453 454 455 456 457 458 459 460 461 462 463 464 465 466 467 468 469 470 471 472 473 474 475 476 477 478 479 480 481 482 483 484 485 486 487 488 489 490 491 492 493 494 495 496 497 498 499 500 501 502 503 504 505 506 507 508 509 510 511 512 513 514 515 516 517 518 519 520 521 522 523 524 525 526 527 528 529 530 531 532 533 534 535 536 537 538 539 540 541 542 543 544 545 546 547 548 549 550 551 552 553 554 555 556 557 558 559 560 561 562 563 564 565 566 567 568 569 570 571 572 573 574 575 576 577 578 579 580 581 582 583 584 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 605 606 607 608 609 610 611 612 613 614 615 616 617 618 619 620 621 622 623 624 625 626 627 628 629 630 631 632 633 634 635 636 637 638 639 640 641 642 643 644 645 646 647 648 649 650 651 652 653 654 655 656 657 658 659 660 661 662 663 664 665 666 667 668 669 670 671 672 673 674 675 676 677 678 679 680 681 682 683 684 685 686 687 688 689 690 691 692 693 694 695 696 697 698 699 700 701 702 703 704 705 706 707 708 709 710 711 712 713 714 715 716 717 718 719 720 721 722 723 724 725 726 727 728 729 730 731 732 733 734 735 736 737 738 739 740 741 742 743 744 745 746 747 748 749 750 751 752 753 754 755 756 757 758 759 760 761 762 763 764 765 766 767 768 769 770 771 772 773 774 775 776 777 778 779 780 781 782 783 784 785 786 787 788 789 790 791 792 793 794 795 796 797 798 799 800 801 802 803 804 805 806 807 808 809 810 811 812 813 814 815 816 817 818 819 820 821 822 823 824 825 826 827 828 829 830 831 832 833 834 835 836 837 838 839 840 841 842 843 844 845 846 847 848 849 850 851 852 853 854 855 856 857 858 859 860 861 862 863 864 865 866 867 868 869 870 871 872 873 874 875 876 877 878 879 880 881 882 883 884 885 886 887 888 889 890 891 892 893 894 895 896 897 898 899 900 901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950 951 952 953 954 955 956 957 958 959 960 961 962 963 964 965 966 967 968 969 970 971 972 973 974 975 976 977 978 979 980 981 982 983 984 985 986 987 988 989 990 991 992 993 994 995 996 997 998 999 10



