

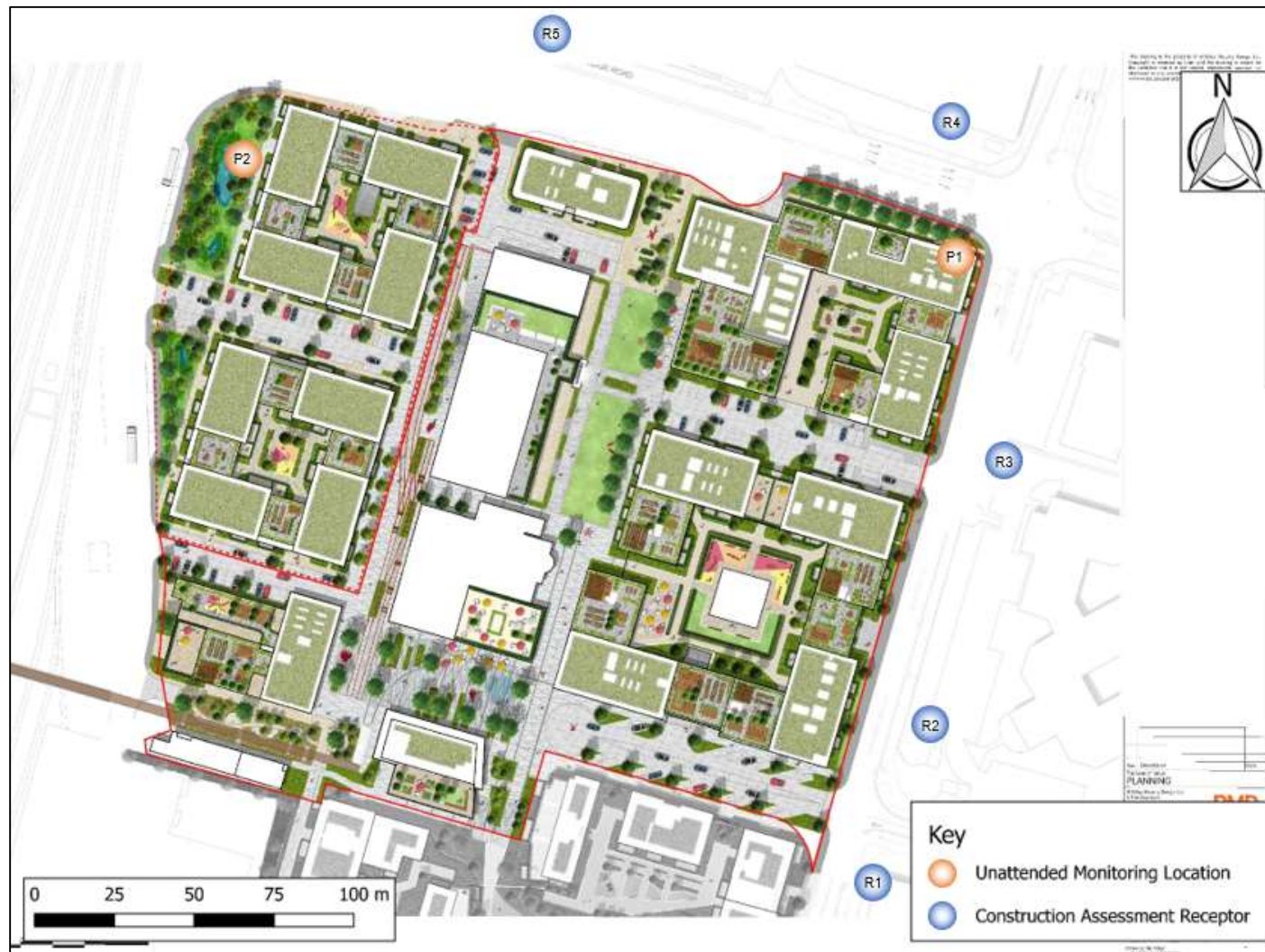


APPENDIX 10 – NOISE AND VIBRATION

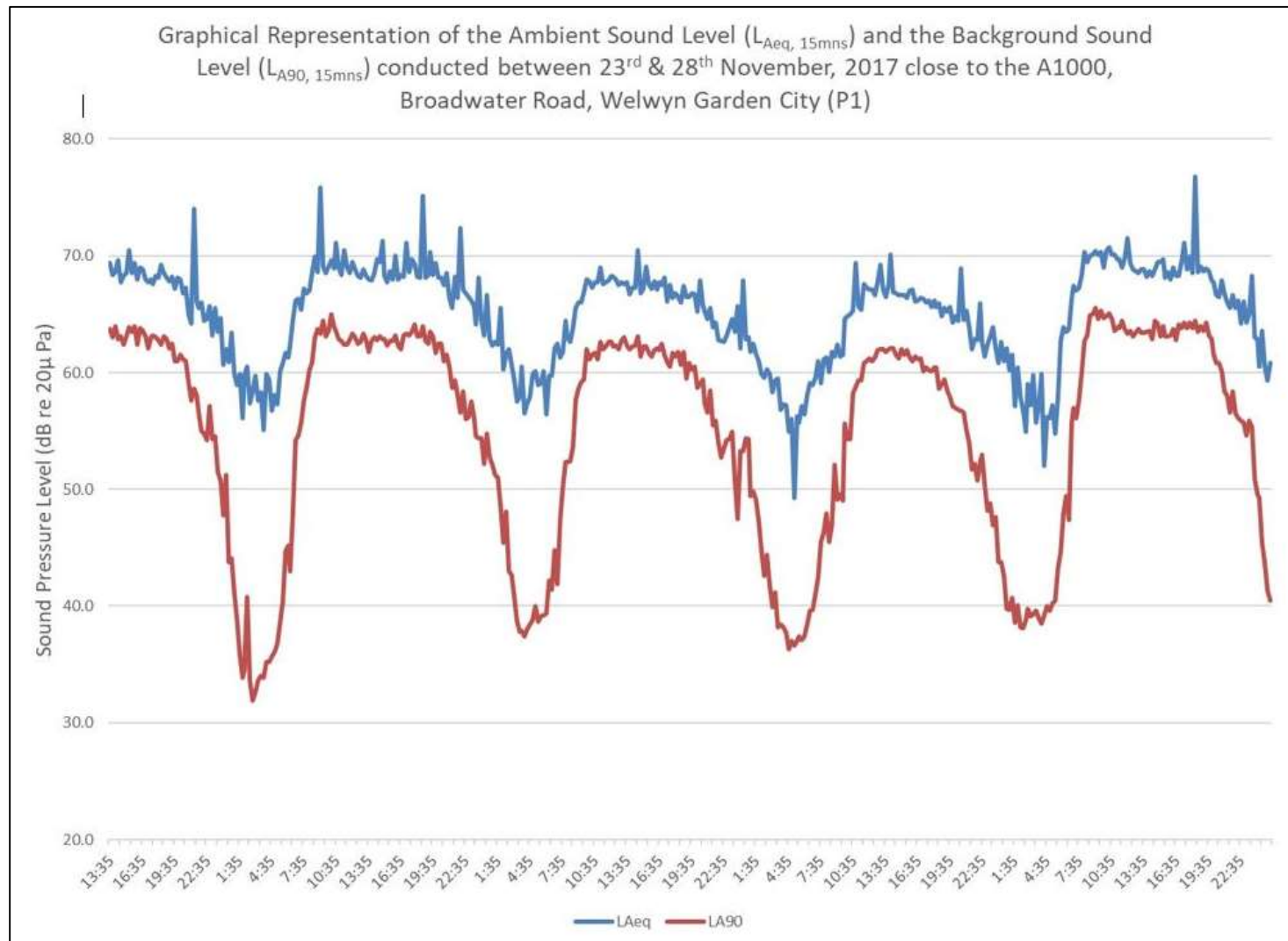
Appendix 10.1: Glossary of Terms

Term	Definition
Decibel (dB)	A scale for comparing the ratios of two quantities, including sound pressure and sound power. The difference in level between two sounds s_1 and s_2 is given by $20 \log_{10} (s_1/s_2)$. The decibel can also be used to measure absolute quantities by specifying a reference value that fixes one point on the scale. For sound pressure, the reference value is $20\mu\text{Pa}$.
A-weighting, dB(A)	The unit of sound level, weighted according to the A-scale, which takes into account the increased sensitivity of the human ear at some frequencies.
Noise Level Indices	Noise levels usually fluctuate over time, so it is often necessary to consider an average or statistical noise level. This can be done in several ways, so a number of different noise indices have been defined, according to how the averaging or statistics are carried out.
$L_{eq,T}$	A noise level index called the equivalent continuous noise level over the time period T. This is the level of a notional steady sound that would contain the same amount of sound energy as the actual, possibly fluctuating, sound that was recorded.
$L_{max,F}$	A noise level index defined as the maximum noise level during the period T. L_{max} is sometimes used for the assessment of occasional loud noises, which may have little effect on the overall L_{eq} noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.
$L_{90,T}$	A noise level index. The noise level exceeded for 90% of the time over the period T. L_{90} can be considered to be the 'average minimum' noise level and is often used to describe the background noise.
Free-Field	Far from the presence of sound reflecting objects (except the ground), usually taken to mean at least 3.5m
Ambient Noise Level	The totally encompassing sound in a given situation at a given time, usually composed of a sound from many sources both distant and near ($L_{Aeq,T}$).
Residual Noise Level	The ambient noise remaining at a given position in a given situation when specified sources are suppressed to a degree such that they do not contribute to the ambient noise level ($L_{Aeq,T}$)
Specific Noise Level	The equivalent continuous A-weighted sound pressure level at the assessment position produced by the specific noise source (the noise source under investigation) over a given time interval ($L_{Aeq,T}$)
Rating Noise Level	The specific noise level plus any adjustment for the characteristic features of the noise ($L_{Ar,Tr}$).

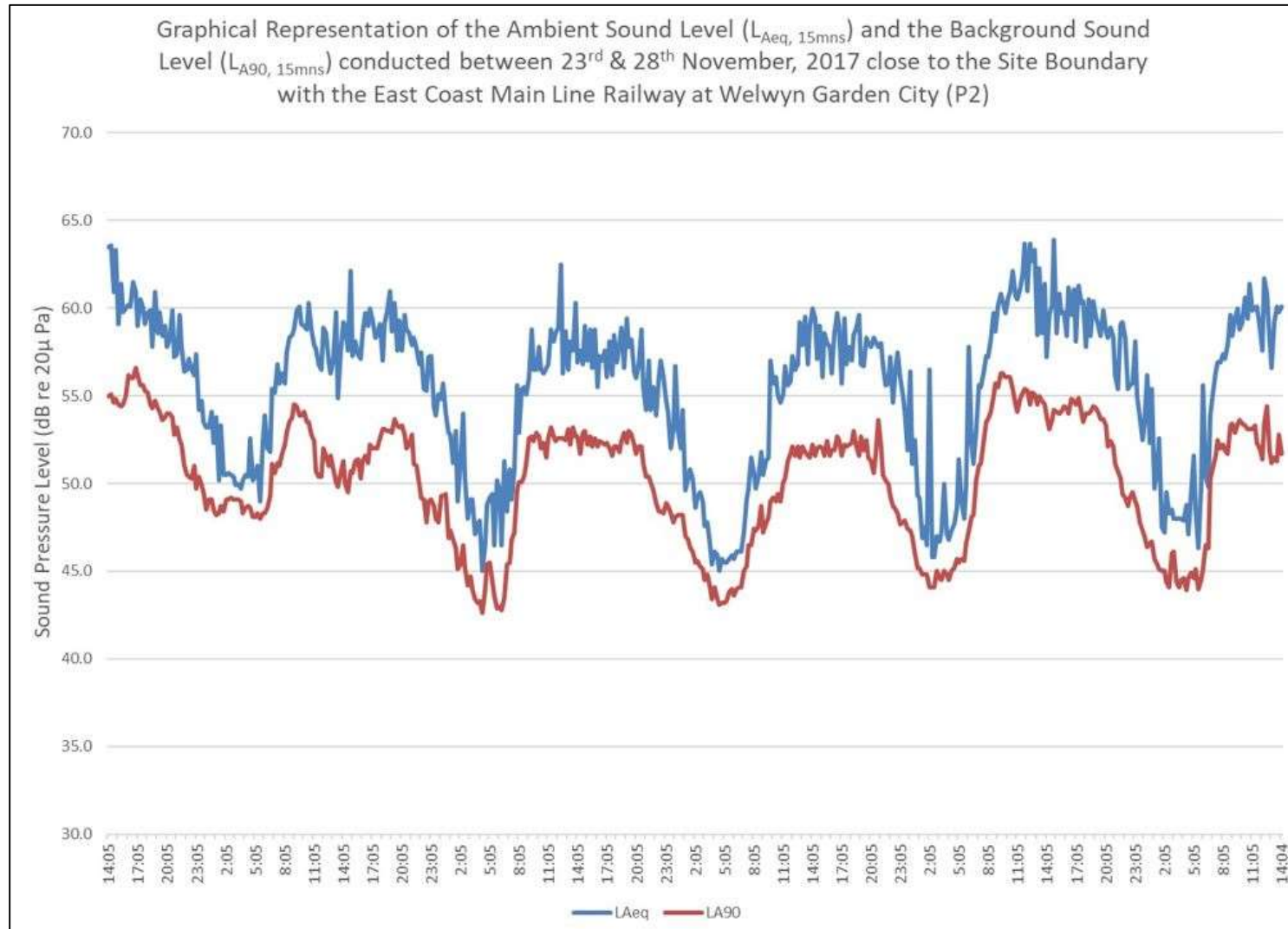
Appendix 10.2: Proposed Development Layout and Monitoring/Assessment Positions



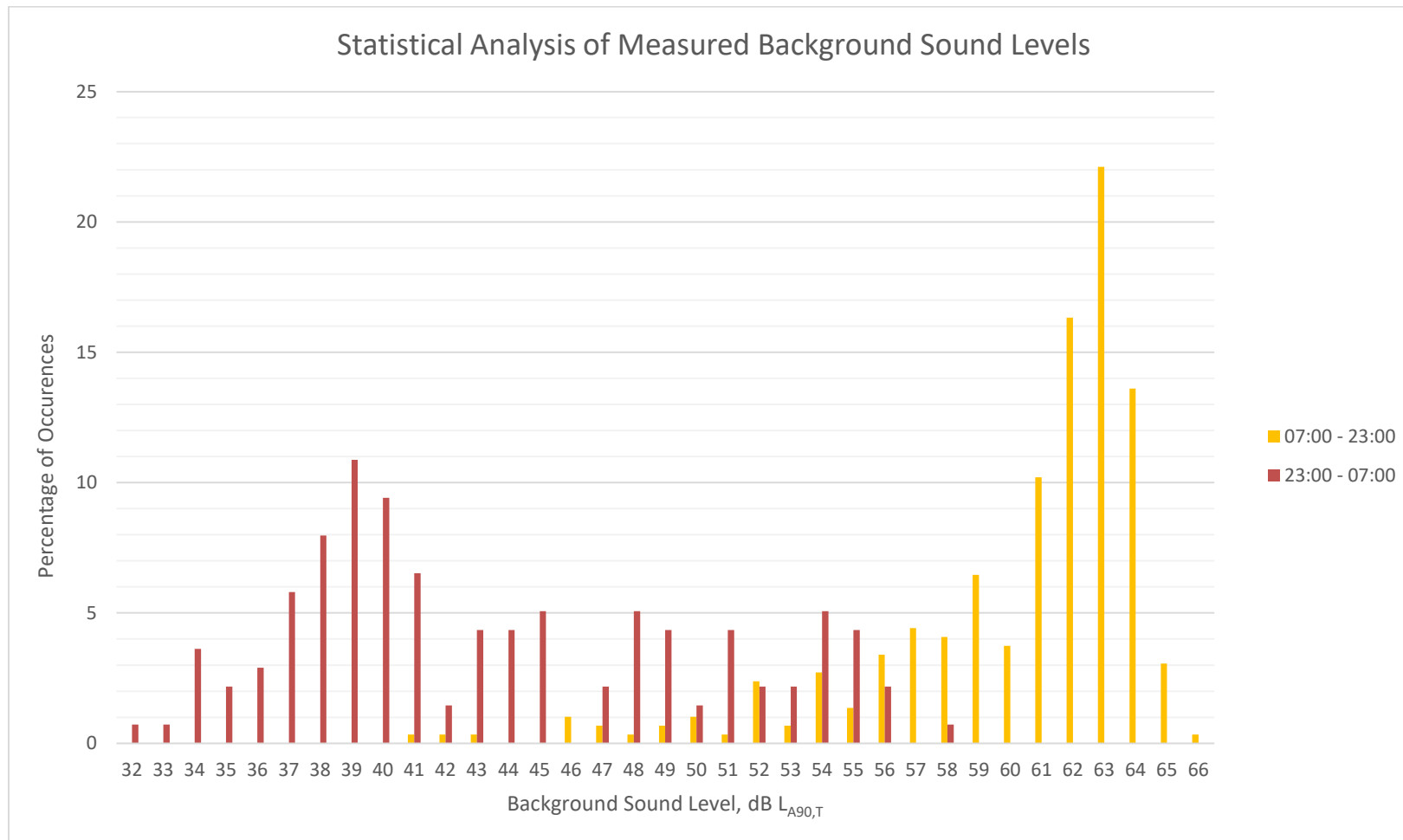
Appendix 10.3: Unattended Survey Results – P1



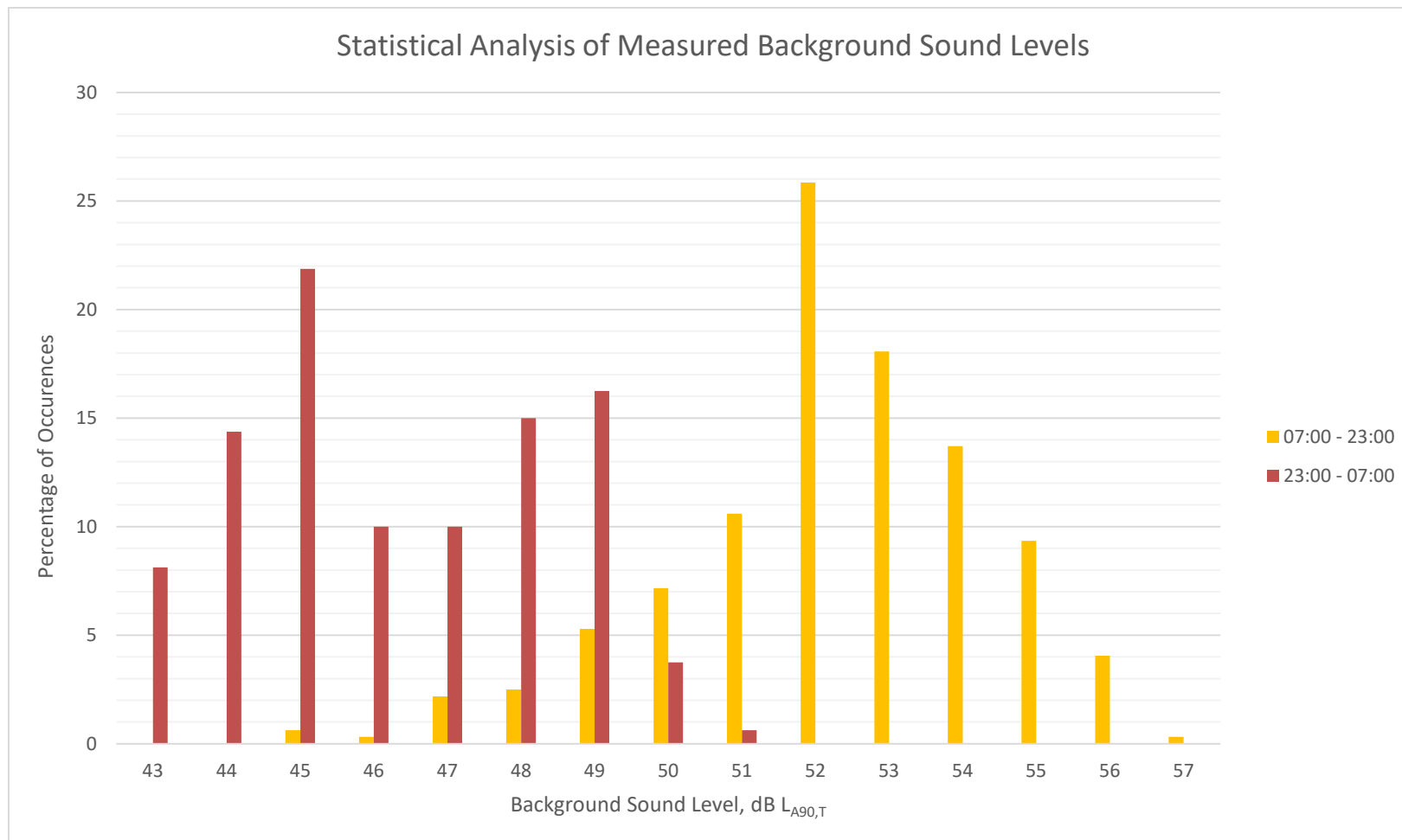
Appendix 10.4: Unattended Survey Results – P2



Appendix 10.5: Statistical Analysis of Background Sound Levels at P1



Appendix 10.6: Statistical Analysis of Background Sound Levels at P2



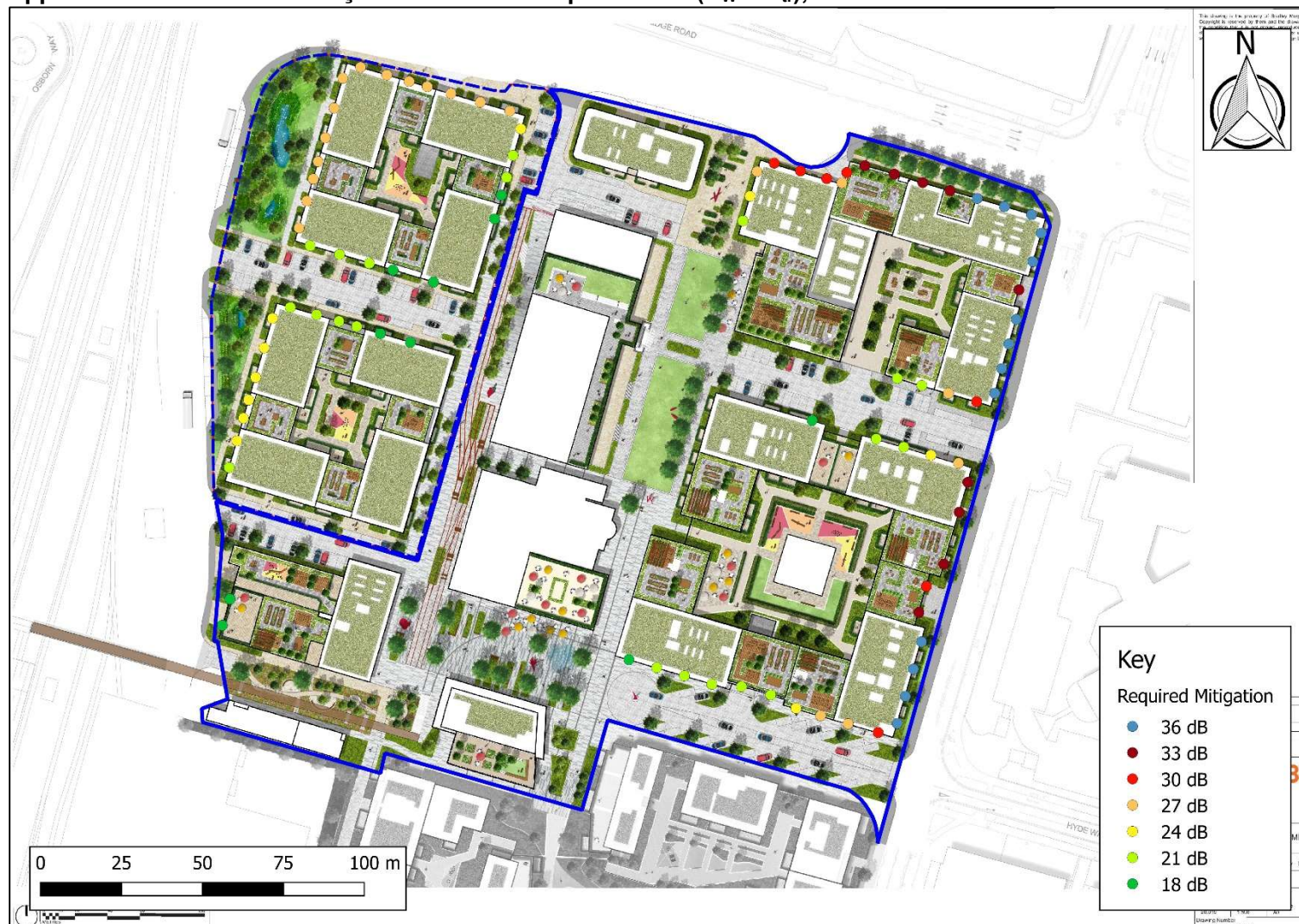
Appendix 10.7: Daytime Noise Contour, $L_{Aeq,16hr}$



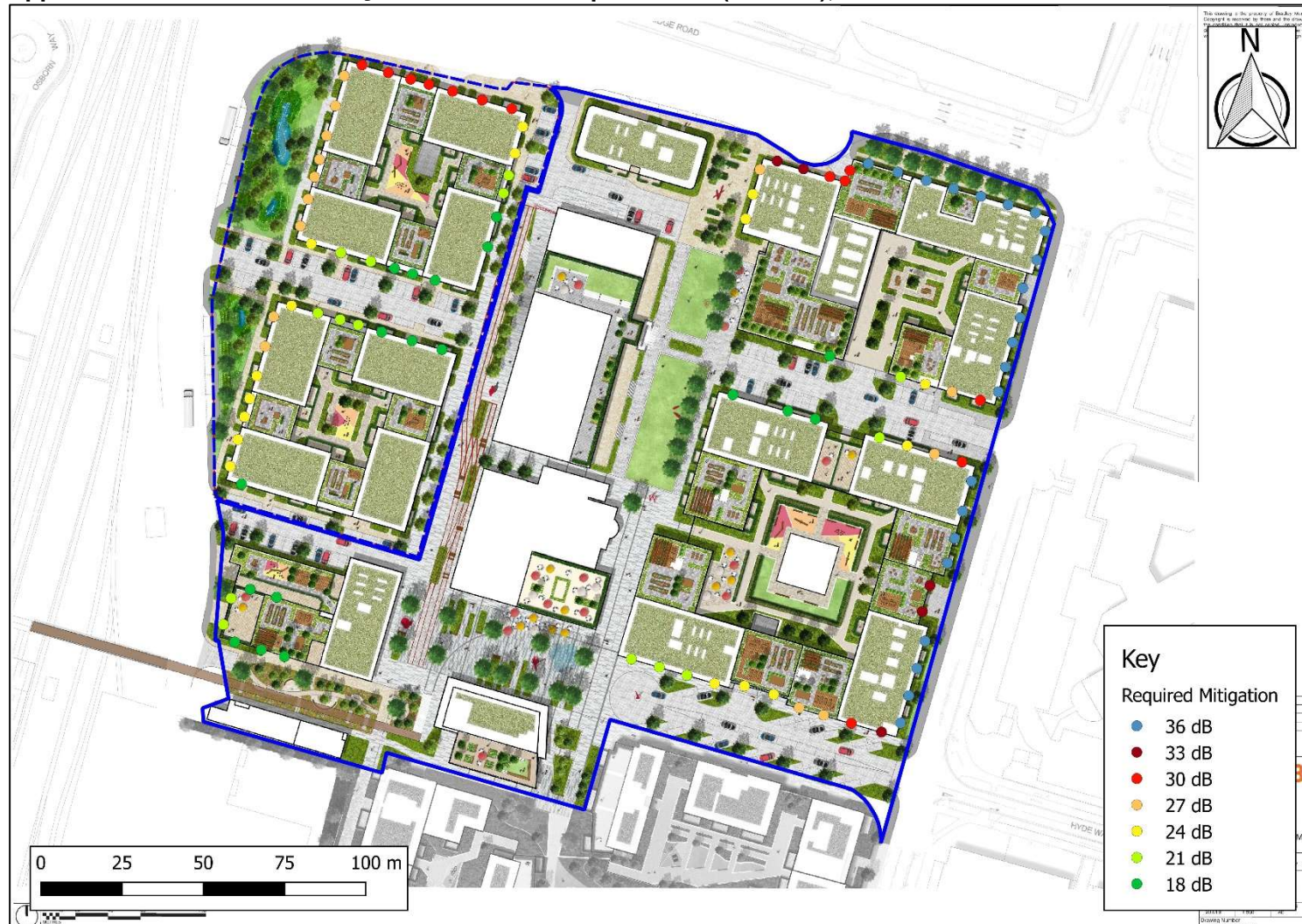
Appendix 10.8: Night-time Noise Contour, $L_{Aeq,8hr}$



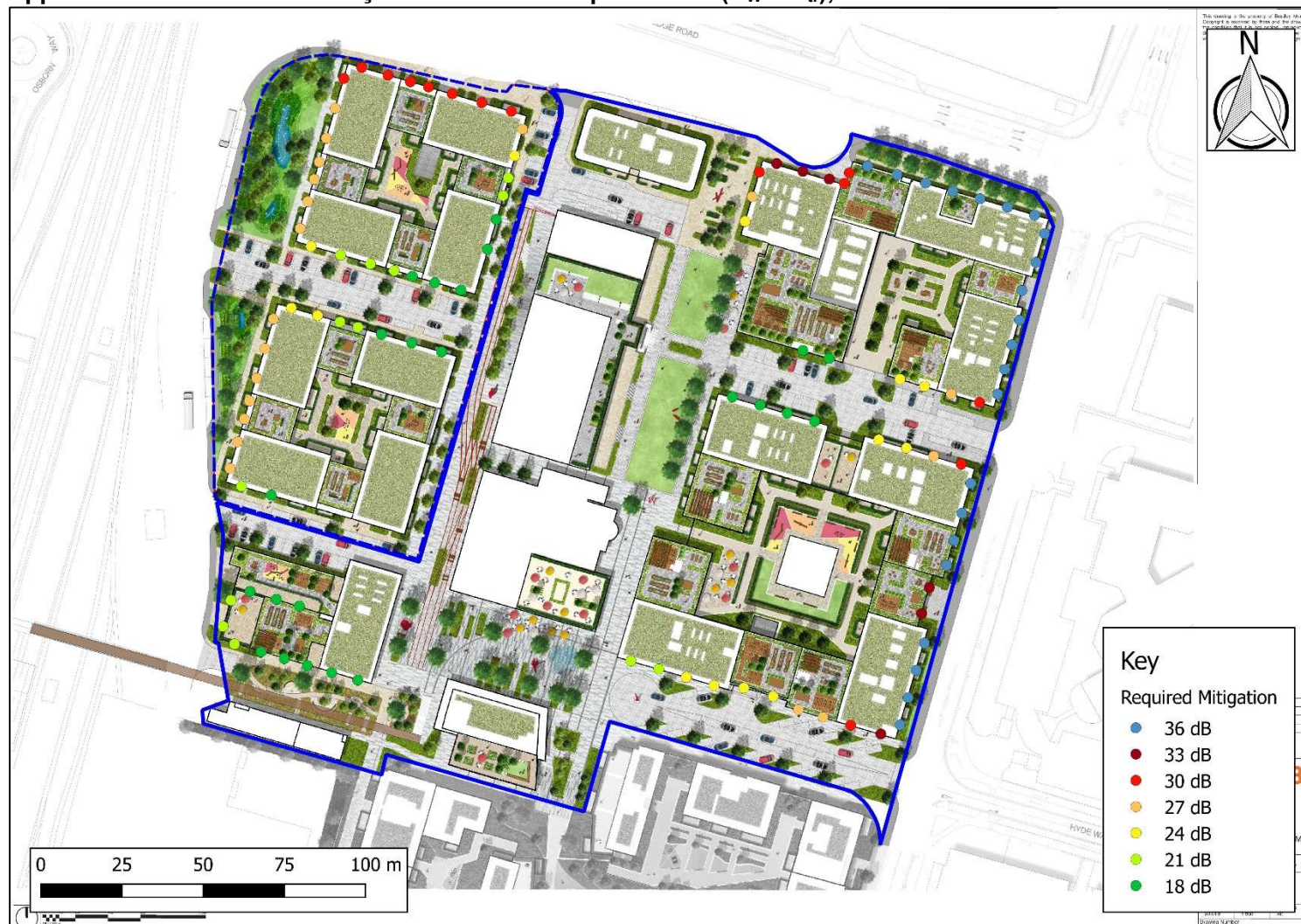
Appendix 10.9: Calculated Façade Reduction Requirements ($R_w + C_{tr}$), Ground Floor



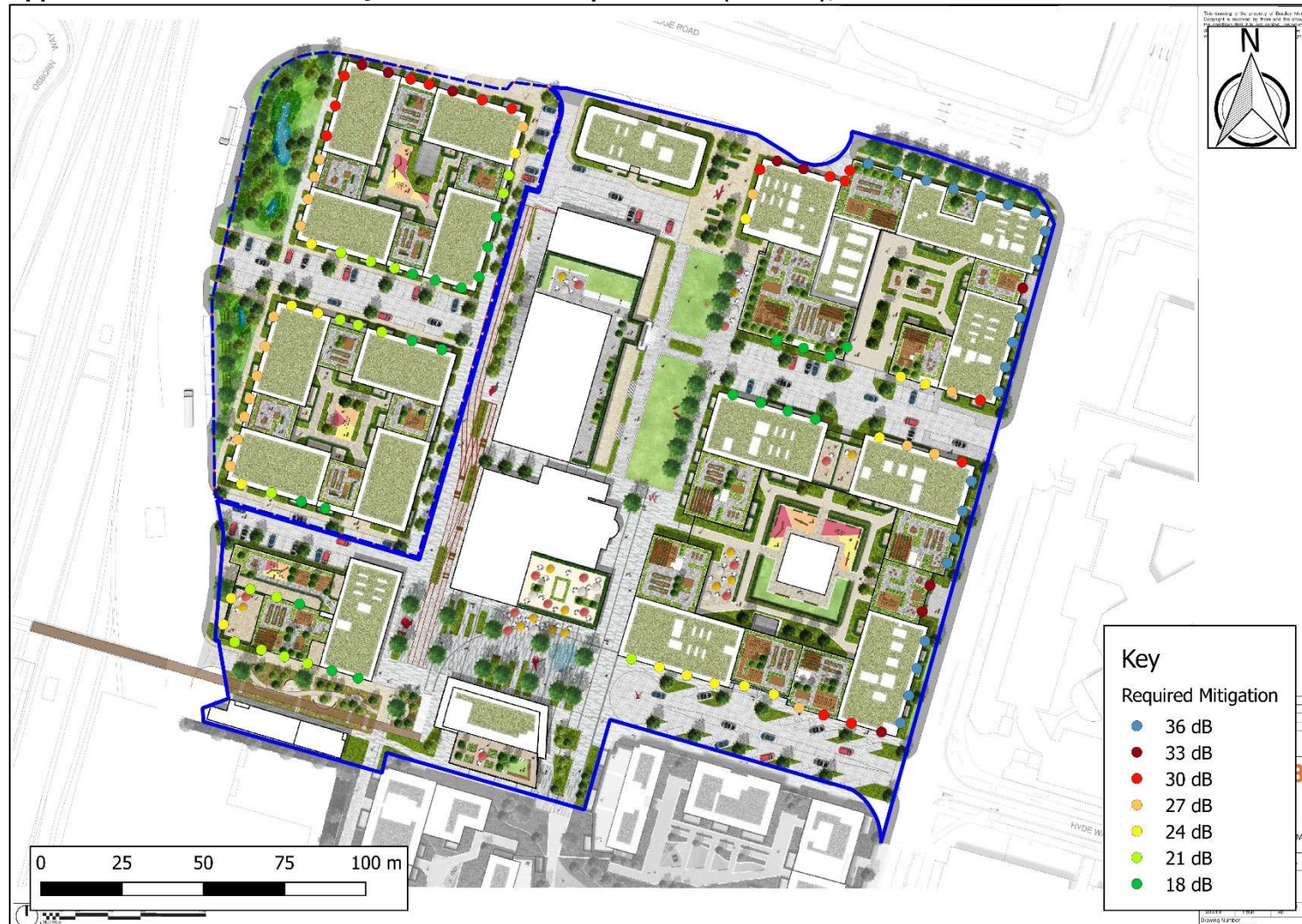
Appendix 10.10: Calculated Façade Reduction Requirements ($R_w + C_{tr}$), First Floor



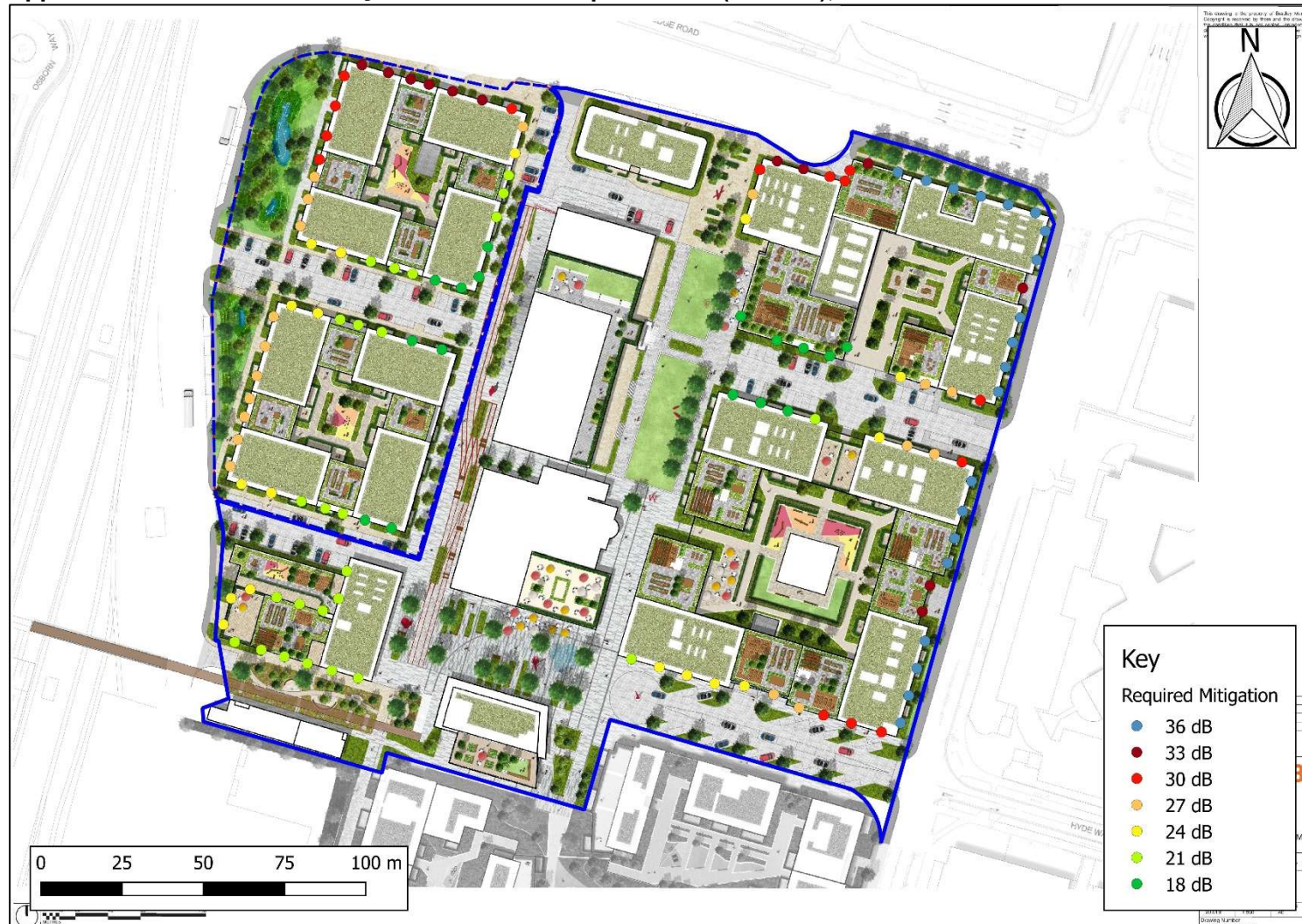
Appendix 10.11: Calculated Façade Reduction Requirements ($R_w + C_{tr}$), Second Floor



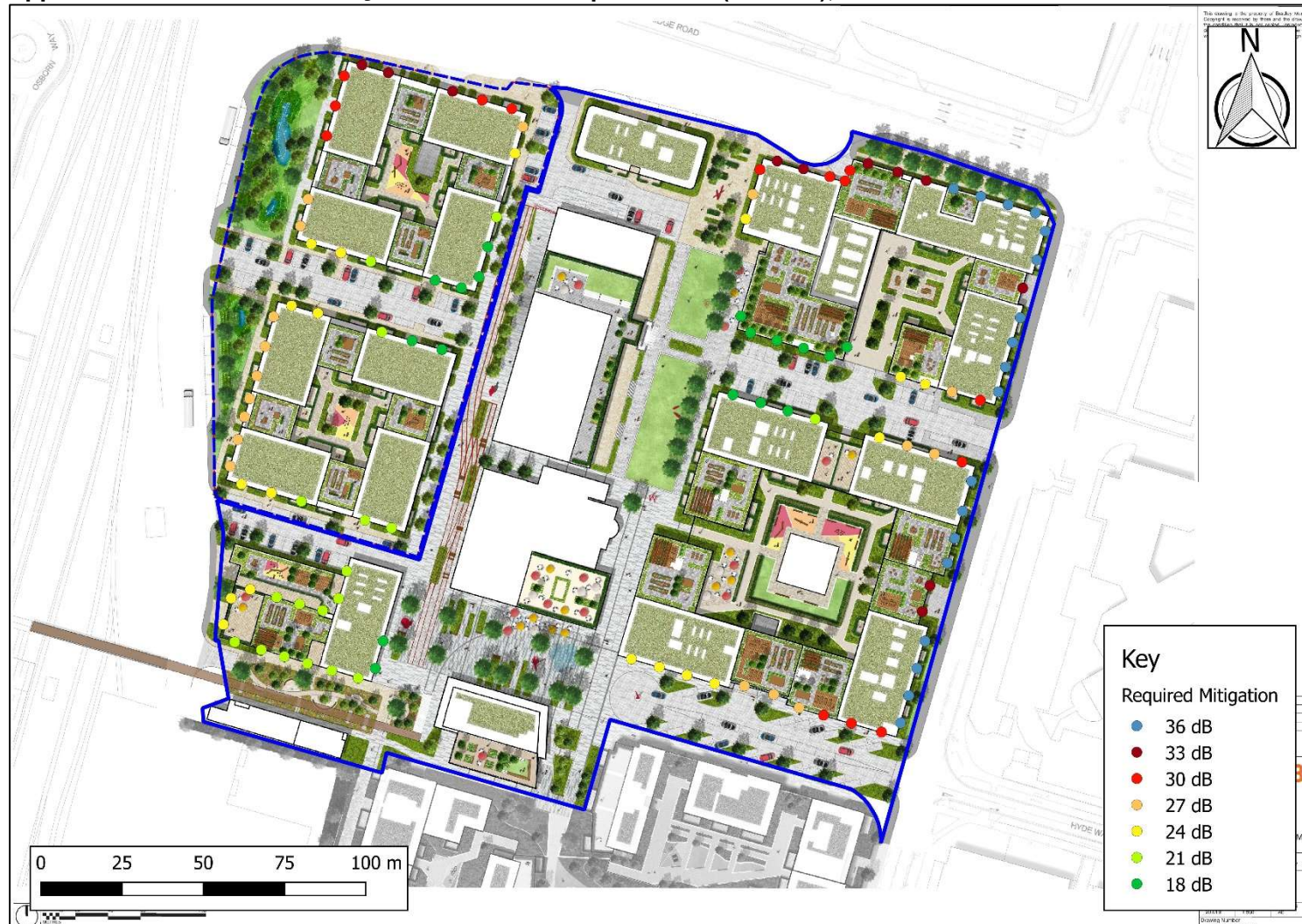
Appendix 10.12: Calculated Façade Reduction Requirements ($R_w + C_{tr}$), Third Floor



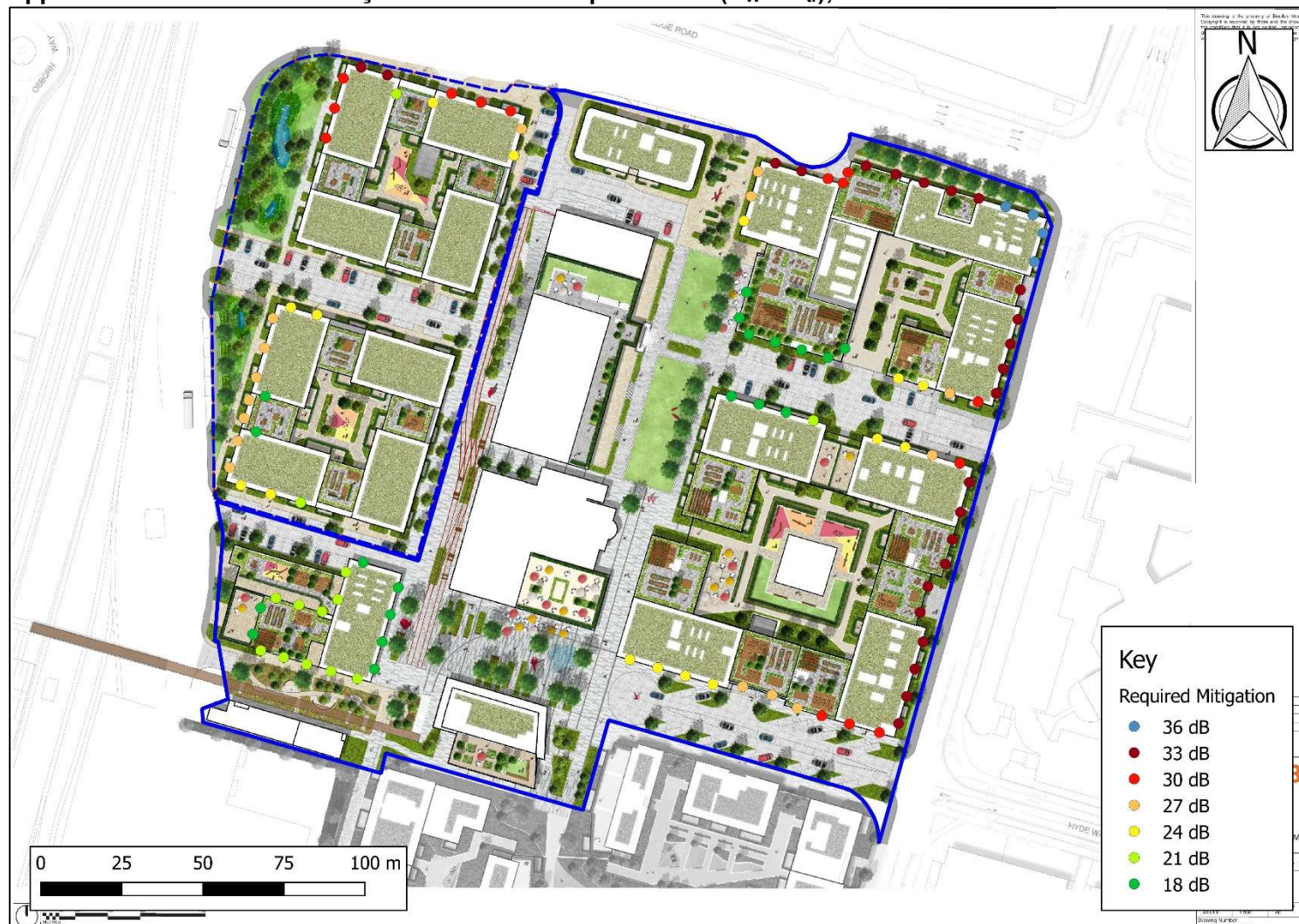
Appendix 10.13: Calculated Façade Reduction Requirements ($R_w + C_{tr}$), Fourth Floor



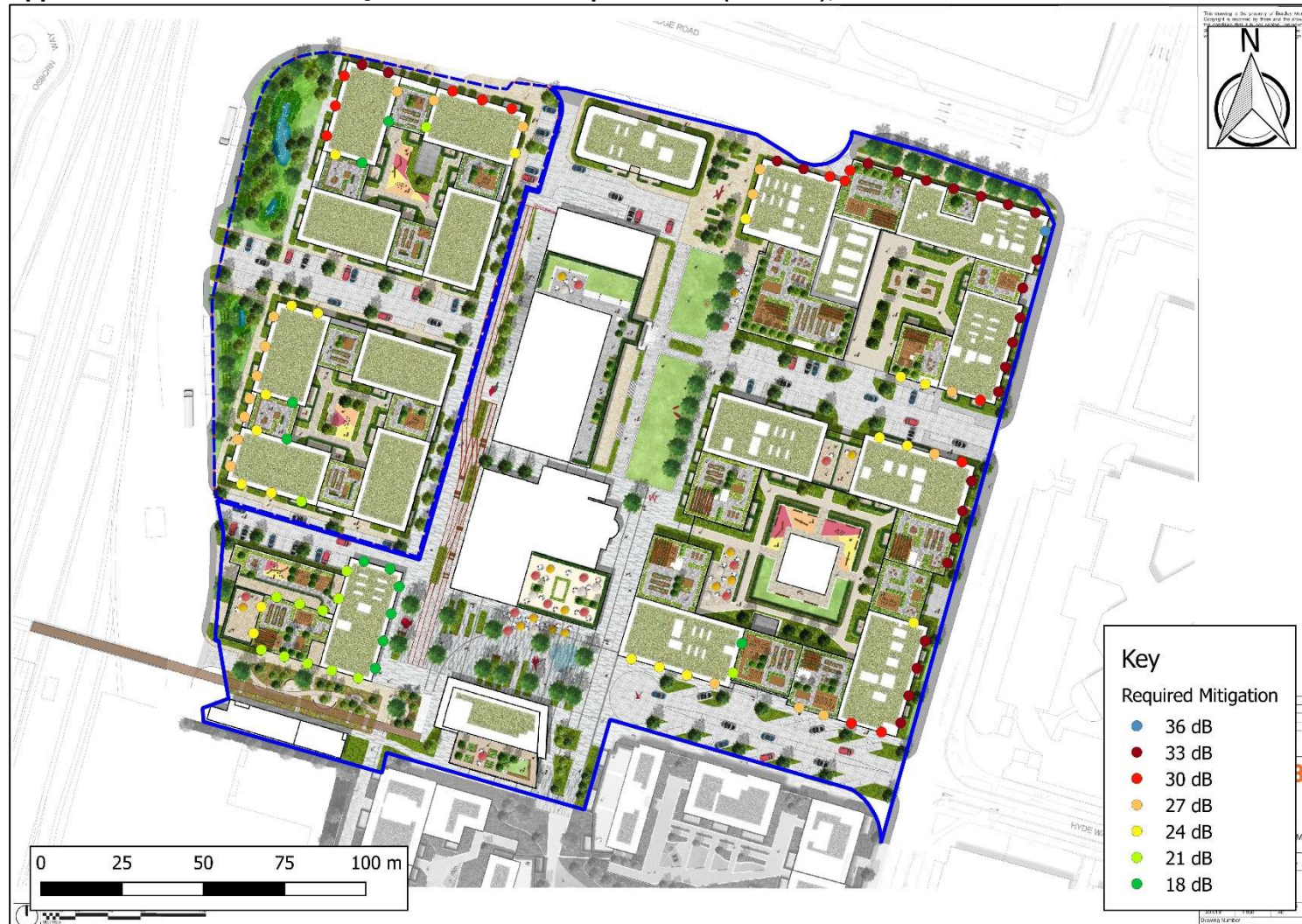
Appendix 10.14: Calculated Façade Reduction Requirements ($R_w + C_{tr}$), Fifth Floor



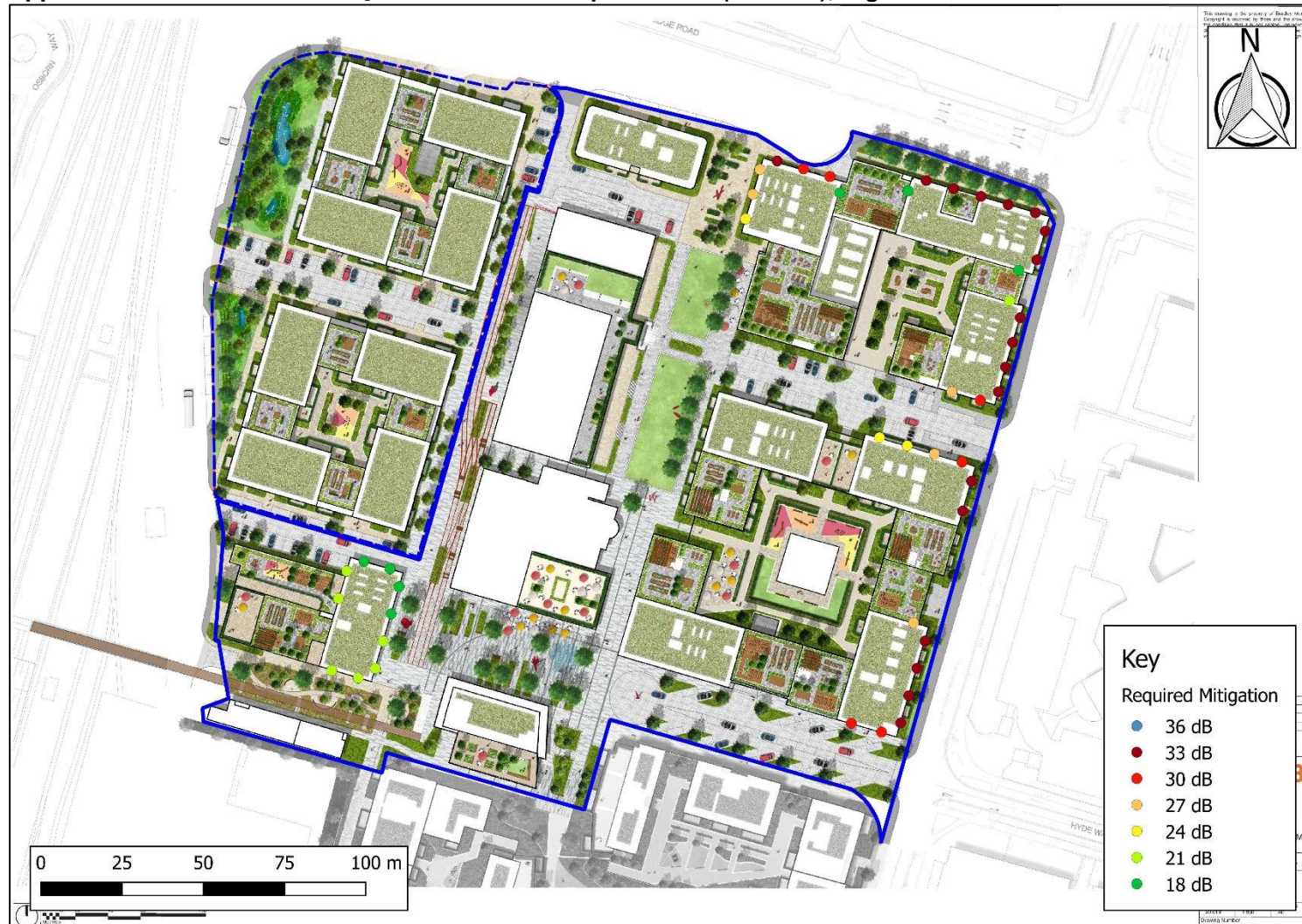
Appendix 10.15: Calculated Façade Reduction Requirements ($R_w + C_{tr}$), Sixth Floor



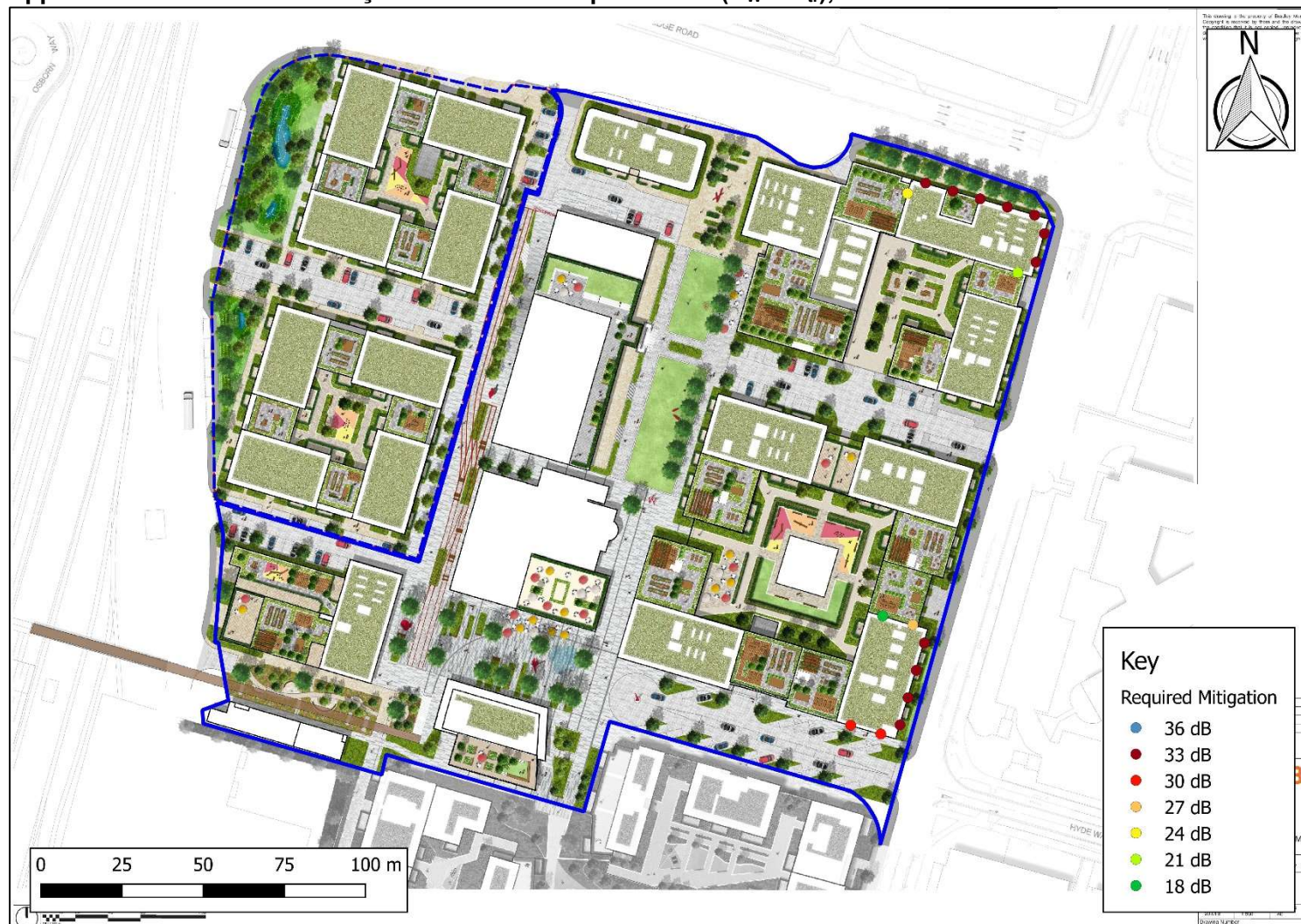
Appendix 10.16: Calculated Façade Reduction Requirements ($R_w + C_{tr}$), Seventh Floor



Appendix 10.17: Calculated Façade Reduction Requirements ($R_w + C_{tr}$), Eighth Floor



Appendix 10.18: Calculated Façade Reduction Requirements ($R_w + C_{tr}$), Ninth Floor





Appendix 10.19: Road Traffic Flows

Link ID	Road Link	Road Speed, MPH	2017 Baseline		2025 Do Minimum		2025 Do Something		2025 Do Minimum (Excl. Consented Development to the South)	
			18-Hr AAWT	HGV %	18-Hr AAWT	HGV %	18-Hr AAWT	HGV %	18-Hr AAWT	HGV %
1	Bridge Road (W)	35	15739	5%	16816	5%	17064	5%	16605	5%
2	Bridge Road	35	15739	5%	16816	5%	19636	5%	16605	5%
3	Bessemer Road	35	12619	3%	14382	3%	15857	3%	13313	3%
4	Bridge Road (E)	35	12914	7%	14071	7%	14592	7%	13624	7%
5	Broadwater Road (N of Hydeway)	35	13764	3%	16424	3%	18618	3%	14521	3%
6	Broadwater Road (S of Hydeway)	35	13764	3%	16413	3%	18586	3%	14521	3%
7	Broadwater Road (S of Site)	35	13764	3%	16388	3%	18560	3%	14521	3%