London & Regional (Bewlay House) Limited

Proposed Redevelopment

Bewlay House, 32 Jamestown Road, Camden

Noise Assessment

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1	20/06/13	First Issue
2	05/12/13	Second Issue – Revised Site Plans
3	17/04/15	Third Issue – Revised Site Plans
4	23/04/15	Fourth Issue – Minor Amendments

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1.0 Introduction

1.1 Purpose of this Report

This report presents the findings of a noise assessment for the proposed refurbishments of existing office units at Bewlay House, 32 Jamestown Road, Camden. This report has been updated to reflect changes to the scheme proposals that have taken place since the issue of the previous noise assessment undertaken by WYG in 2013; the assessment has also been undertaken in accordance with updated guidance documents. This version of the report assesses updated details with regard to roof mounted air handling units.

A description of the existing noise environment in and around the site is provided. Noise surveys have been undertaken and the results used to verify predictions of the short-term and long-term effects of noise. The noise levels from the proposed development have been predicted at local representative receptors using CADNA noise modelling software which incorporates ISO 9613 and CRTN methodologies and calculations.

In addition to the above, reference has also been given to Planning Condition 7 (planning permission ref: 2013/8265/P) which states:

"(7) Noise levels at a point 1 metre external to sensitive facades shall be at least 5dB(A) less than the existing background measurement (LA90), expressed in dB(A) when all plant/equipment (or any part of it) is in operation unless the plant/equipment hereby permitted will have a noise that has a distinguishable, discrete continuous note (whine, hiss, screech, hum) and/or if there are distinct impulses (bangs, clicks, clatters, thumps), then the noise levels from that piece of plant/equipment at any sensitive façade shall be at least 10dB(A) below the LA90, expressed in dB(A)."

A list of acoustic terminology and abbreviations used in this report is provided in Appendix A and a set of location plans and noise contour plots relevant to the assessment are presented in Appendix B.

1.2 Legislative Context (England)

PPG24 was replaced by the National Planning Policy Framework (NPPF) on 27 March 2012. With regard to noise and planning, the NPPF contains the following 4 short statements (section 123):

A. Avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development;

B. Mitigate and reduce to a minimum other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions;

C. Recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established; and

D. Identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

The national Planning Practice Guidance (PPG) web-based resource was launched by the Department for Communities and Local Government (DCLG) on 6 March 2014 to support the National Planning Policy Framework and make it more accessible. The overall aim of the guidance, tying in with the principles of the NPPF and the Explanatory Note of the Noise Policy Statement for England (NSPE), is to *identify whether the overall effect of noise exposure is, or would be, above or below the significant observed adverse effect level and the lowest observed adverse effect level for the given situation.*

A summary of the effects of noise exposure associated with both noise generating developments and noise sensitive developments is presented within the PPG: Noise and repeated as follows:

Table 1.1 Noise Exposure Hierarchy

Perception	Examples of Outcomes	Increasing Effect Level	Action
Not noticeable	No Effect	No Observed Effect	No Specific Measures Required
Noticeable and not intrusive	Noise can be heard, but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect (NOAEL)	No Specific Measures Required
Lowest Observed Adverse Effect Level (LOAEL)			
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; closing windows for some of the time because of the noise. Potential for non-awakening sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level (SOAEL)			
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, e.g. having to keep windows closed most of the time, avoiding certain activities during periods of intrusion. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Noticeable and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable Observed Adverse Effect	Prevent

2.0 Assessment Criteria

2.1 Internal Noise Assessment Criteria

In order to enable the assessment of the proposed development in terms of LOAEL and SOAEL, Table 2.1 presents equivalent noise levels and associated actions with the target noise level criteria identified. Within the context of the Proposed Development, national planning policy and appropriate guidance documents including 'BS 8233 – Guidance on Sound Insulation and Noise Reduction for Buildings' (2014). For the purpose of this assessment, the target noise level criteria are noted in italics in the table below.

Table 2.1 Noise Level Criteria and Actions

Effect Level	Noise Level Criteria	Action / Justification
No Observed Adverse Effect Level	Noise levels below: Open Plan Office – 45 $dBL_{Aeq,T}$	Action: None Justification: Within BS8233 criterion
Lowest Observed Adverse Effect Level	Noise levels exceed: Open Plan Office – 45 $dBL_{Aeq,T}$	Mitigate to achieve: *Open Plan Office – 45 $dBL_{Aeq,T}$*
Significant Observed Adverse Effect	Noise levels exceed: Open Plan Office – 50 $dBL_{Aeq,T}$	Avoid Mitigate to achieve: Open Plan Office – 45-50 $dBL_{Aeq,T}$
Unacceptable Observed Adverse Effect	Noise levels with mitigation exceed: Open Plan Office – 50 $dBL_{Aeq,T}$	Prevent

2.2 Building Services Plant Noise Assessment

Noise from building services plant has been assessed in accordance with Planning Condition 7 (planning permission reference 2013/8265/P) which states:

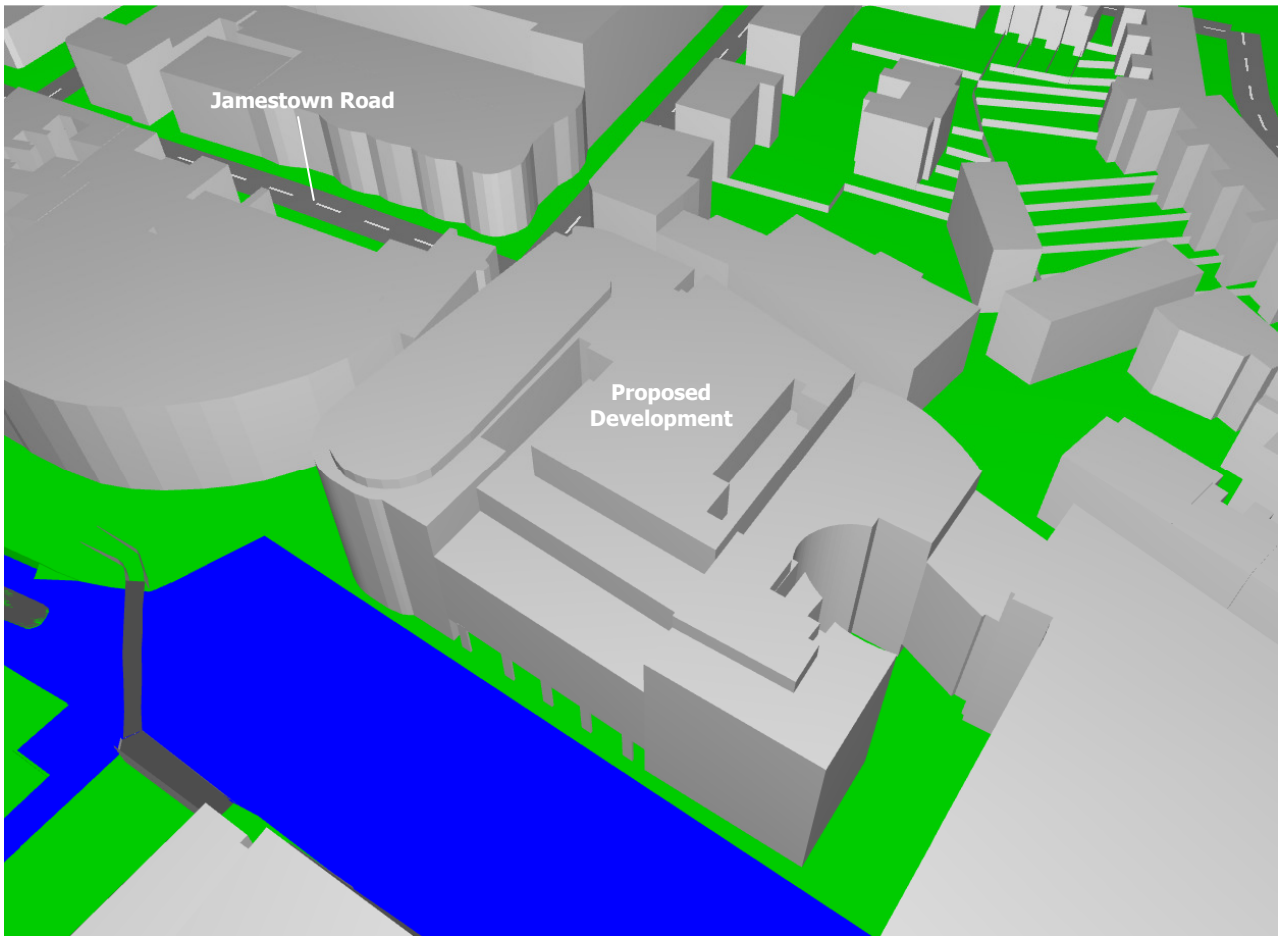
"(7) Noise levels at a point 1 metre external to sensitive facades shall be at least 5dB(A) less than the existing background measurement (LA90), expressed in dB(A) when all plant/equipment (or any part of it) is in operation unless the plant/equipment hereby permitted will have a noise that has a distinguishable, discrete continuous note (whine, hiss, screech, hum) and/or if there are distinct impulses (bangs, clicks, clatters, thumps), then the noise levels from that piece of plant/equipment at any sensitive façade shall be at least 10dB(A) below the LA90, expressed in dB(A)."

3.0 Assessment Methodology

3.1 Noise Modelling Methodology

Three dimensional noise modelling has been undertaken based on the monitoring data to predict L_{Aeq} and L_{Amax} noise levels at a large number of locations both horizontally and vertically. CADNA noise modelling software has been used (as shown in Figure 3.1). This model is based on the Department of Transport Calculation of Road Traffic Noise (CRTN) and ISO 9613 noise propagation methodology and allows for detailed prediction of noise levels to be undertaken.

Figure 3.1 CADNA Noise Model



The modelling software calculates noise levels based on the emission parameters and spatial settings that are entered. Input data, assumptions and model settings as given in the table below have been used.

Table 3.1 Modelling Parameters Sources and Assumptions

Parameter	Source	Details
Horizontal distances – around site	Ordnance Survey	Ordnance Survey
Ground levels – around site	Ordnance Survey	Ordnance Survey
Ground levels – other areas	Site Observations and Ordnance Survey	OS 1:25,000 contours and OS 1:10,000 spot heights.
Traffic data, main surrounding roads	WYGE	Traffic flows for local roads based on WYGE observations and experience.
Traffic data – local roads	WYGE	Traffic flows for local roads based on WYGE observations and experience.
Building heights – around site	WYGE Observations	8 m height for two storey residential properties, and 4 m for Bungalows
Barrier heights	WYGE Observations	All existing barriers at 1.0 m with the exception of hedges and trees which are assumed to offer no noise protection.
Receptor positions	WYGE	1 m from façade, height of 1.5 m for ground floor, 4.5 m for first floor properties with a 3m increase per storey. 1.5 m height for model grid and monitoring locations for validation.
Reflections	WYGE	First order reflections have been applied based on mirror image sources
Absorbent Ground	CADNA	Frequency dependant ground absorption has been applied based on values specified in VDI 2714/16 clause 6.3.
Façade Correction	CADNA	Façade corrections have been incorporated into the modelling
Gradient	CADNA	Gradient for each road has been calculated from the height information using the 'calc slope of roads' tool
Proposed Plans	Ben Adams Architects	Proposed Plans: A12-007-199 - 206 Proposed Elevations:A12-007-400/401

It is acknowledged that a number of these assumptions will affect the overall noise levels presented in this report. However, it should be noted that certain assumptions made, as identified above, are worst case.

3.2 Model Input Data

3.2.1 Traffic Noise Data

All roads expected to make a significant contribution have been included within this assessment. Noise emissions from existing traffic flows have been derived from verification of the measured noise levels along with observations made during the site survey and/or WYG Environment (WYGE) experience of similar road systems. Estimates of the vehicle speeds have been made based upon the speed restrictions currently in force in the area.

3.2.2 Building Services Plant Noise Data

Noise level data associated with the proposed building services plan are presented in the table below. The air handling units and noise breaking out from plant enclosure have been modelled as horizontal and vertical area sources within the fifth floor plant area. The boiler flue terminations have been modelled as point sources.

Table 3.2 New Building Services Plant Sound Power Levels

Description	Octave Band Centre Frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
1 x S9-XBV-LL2WP (Air Handling Unit)	78	68	69	51	40	36	37	22
1 x XBC75-V-LES (Air Handling Unit)	67	59	56	54	45	37	38	30
1 x VTL-E 116-L (Cooling Tower)	93	89	79	72	71	66	62	67
3 x Boiler Flue Termination	71.8	71.8	66.2	64.1	65.2	59.8	51.3	41.4

Additional plant is understood to include condensers located on the roof of the proposed offices, and backup boilers and water pumps located within the ground floor plant room. The maximum sound pressure levels of the point and vertical area sources at 1 metres were estimated in the model as a conditional maximum level that the noise levels at nearby existing receptors were predicted to meet the assessment criteria.

3.3 Existing and Proposed Sensitive Receptors (for Plant Noise Assessment)

The closest existing sensitive receptors are residential premises located at 34 - 36 Jamestown Road and the hotel located at 30 Jamestown Road. The table below summarises receptor locations that have been selected to represent worst-case residential receptors with respect to direct noise from the proposed plant. The locations of the receptors are shown on SK02 in Appendix B:

Table 3.3 Existing Receptor Locations

Ref.	Description	Co-ordinates		
		Closest Source	Distance to Source	Height (m)
R1	Top Floor of 34-36 Jamestown Road, Southern Façade	Boiler Flues	10	21
R2	Top Floor of 30 Jamestown Road, South-Western Façade	AHU Casing	30	24
R3	Top Floor of 30 Jamestown Road, Western Façade	AHU Casing	27	24
R4	Top Floor of 30 Jamestown Road, North-Western Façade	AHU Casing	30	24
R5	Top Floor of 34-36 Jamestown Road, Northern Façade	AHU Inlet	13	24

3.4 Model Verification (Road Traffic and Existing Sources)

The model was verified by modelling the monitoring locations for the 'existing' scenario. Worst case daytime and night time L_{Aeq} and night time L_{Amax} scenarios have been verified. The comparison between the monitoring and modelling results are shown in the tables below.

Table 3.4 Modelled vs. Monitored Results $L_{Aeq;\ daytime\ 07:00 – 23:00}$

Location	Monitored L_{Aeq}	Modelled L_{Aeq}	Difference between Monitored and Modelled Results
LT1	65.9	66.1	0.2
LT2	59.7	59.7	0.0
ST1	71.2	71.1	-0.1
ST2	74.3	74.3	0.0
ST3	63.5	63.5	0.0
ST4	61.9	62.2	0.3
ST5	65.2	65.5	0.3

All values are sound pressure levels in dB re: $2x\ 10^{-5}$ Pa

Table 3.5 Modelled vs. Monitored Results $L_{Aeq;\ night\text{-}time\ 23:00– 07:00}$

Location	Monitored L_{Aeq}	Modelled L_{Aeq}	Difference between Monitored and Modelled Results
LT1	62.0	62.4	0.4
LT2	58.5	58.5	0.0
ST1	67.6	67.6	0.0
ST2	75.5	75.5	0.0
ST3	62.6	62.6	0.0
ST4	64.5	64.5	0.0
ST5	66.7	66.7	0.0

All values are sound pressure levels in dB re: $2x\ 10^{-5}$ Pa

Table 3.6 Modelled vs. Monitored Results $L_{Amax;\ night\text{-}time\ 23:00–07:00}$

Location	Monitored L_{Amax}	Modelled L_{Amax}	Difference between Monitored and Modelled Results
LT1	83.6	84.2	0.6
LT2	74.6	75.0	0.4
ST1	82.8	89.6	6.8
ST2	92.2	92.2	0.0
ST3	81.4	81.4	0.0
ST4	80.9	80.9	0.0
ST5	88.9	87.3	-1.6

All values are sound pressure levels in dB re: $2x\ 10^{-5}$ Pa

The verification points show a divergence between monitored and modelled results of no more than 3 dB with the exception of ST1 night-time (15 minute measurement) which experienced a lower measured noise level (L_{Amax}) than the noise model has calculated, all models are assumed to be suitably verified.

3.5 Tranquillity Rating

An assessment of the existing tranquillity level of the site has been based on the mapping data published by Campaign to Protect Rural England (CPRE). This uses a colour coded system and a 500m assessment grid for the whole of England and a tranquillity rating of between 1 and 10 is assigned (1 being least tranquil and 10 being most). By reference to these maps the development is assessed as falling into Zone 1.

4.0 Noise Survey

A monitoring survey was undertaken to characterise baseline ambient noise levels currently experienced on the site and to establish the relative local background and traffic noise levels.

4.1 Noise Survey Methodology

Equipment used during the survey included:

B&K 2260	Environmental Noise Analyser (WYG1)	s/n	2361273
B&K 4231	Calibrator	s/n	2176211
Rion NL-52	Environmental Noise Analyser (WYG14)	s/n	610212
Rion NL-52	Environmental Noise Analyser (WYG15)	s/n	1221575

The measurement equipment was checked against the appropriate calibrator at the beginning and end of the measurements, in accordance with recommended practice and no drift was observed. The accuracy of the calibrators can be traced to National Physical Laboratory Standards, calibration certificates for which are available on request.

A baseline monitoring survey was undertaken at five locations (as specified in the following table and shown in SK01 of Appendix B from Friday 14th June 2013 to Tuesday 18th June 2013. Attended short term measurements were undertaken at five locations during the day, evening, peak and night-time periods with three additional locations being measured unattended over a 95 hour period. The raw data collected from the long term monitoring is available upon request.

Measurements were taken in general accordance with BS 4142:1997 and BS 7445-1:2003. Weather conditions during the survey period were observed as being dry. Anemometer readings confirmed that wind speeds were less than 5 ms^{-1} at all times during the survey with a predominant westerly wind direction.

Table 4.1 Noise Monitoring Locations

Ref	Description	Grid Reference	
		X	Y
LT1	Third floor balcony of 32 Jamestown Road, southern façade	528654.07	183992.58
LT2	Roof of 32 Jamestown Road, northern façade	528633.63	184036.08
ST1	Adjacent to entrance of 32 Jamestown Road	528754.17	184091.89
ST2	Adjacent to 279 Camden High Street	528554.92	183908.75
ST3	Adjacent to 31 Oval Road and entrance of Centric Close	528630.10	184068.65
ST4	Tow path opposite 32 Bewlay House, adjacent to Brunel Building	528664.40	184088.18
ST5	Adjacent to 44 Middle Yar, Camden Lock	528654.07	183992.58

4.2 Noise Survey Results

Existing ambient noise levels around the site are dominated by traffic noise from Jamestown Road and noise from the nearby Camden Lock market during the daytime. During the evening and night-time periods noise from music and patrons of nearby pubs and clubs was observed to the north and east of the site, and along Jamestown Road. Noise levels along Camden High Street were dominated by road traffic noise and various sources of music during the daytime, with noise dominated by pedestrians and road traffic during the evening and night-time periods. Distant noise from railway lines to the west and north of the site was also identified during the attended survey.

Ambient and background noise levels are usually described using the L_{Aeq} index (a form of energy average) and the L_{A90} index (i.e. the level exceeded for 90% of the measurement period) respectively. Road traffic noise is generally described using the L_{A10} index (i.e. the level exceeded for 10% of the measurement period).

The results of the statistical measurements and frequency measurements conducted during the survey are summarised in the following table. All values are sound pressure levels in dB (re: 2 x 10^{-5} Pa).

Table 4.2 Results of Baseline Noise Monitoring Survey (Average Levels)

Period	Duration (T)	Monitoring Date and Times	Location	$L_{Aeq,T}$ (dB)	$L_{Amax,T}$ (dB)	$L_{Amin,T}$ (dB)	$L_{A10,T}$ (dB)	$L_{A90,T}$ (dB)
Weekday Daytime 07:00 - 23:00	31 Hours	14/06/2013 - 18/06/2013 07:00 - 23:00	LT1	65.9	88.6	46.9	69.0	55.9
Weekday Night-time 23:00 – 07:00	16 Hours	14/06/2013 - 18/06/2013 23:00 - 07:00		60.9	83.6	43.8	60.9	49.3
Weekend Daytime 07:00 - 23:00	32 Hours	15/06/2013 - 16/06/2013 07:00 - 23:00		64.8	84.8	45.9	67.9	53.8
Weekend Night-time 23:00 – 07:00	16 Hours	15/06/2013 - 16/06/2013 23:00 - 07:00		62.0	82.6	43.7	62.6	50.3
Weekday Daytime 07:00 - 23:00	30 Hours	14/06/2013 - 18/06/2013 07:00 - 23:00	LT2	58.8	79.8	50.5	59.7	56.0
Weekday Night-time 23:00 – 07:00	16 Hours	14/06/2013 - 18/06/2013 23:00 - 07:00		55.5	74.6	48.2	56.1	52.9
Weekend Daytime 07:00 - 23:00	32 Hours	15/06/2013 - 16/06/2013 07:00 - 23:00		59.7	75.8	49.2	60.4	56.9
Weekend Night-time 23:00 – 07:00	16 Hours	15/06/2013 - 16/06/2013 23:00 - 07:00		58.5	73.3	48.1	58.3	54.7
Day 07:00 - 19:00	15 Mins	14/06/2013 16:01	ST1	71.2	91.4	52.0	74.5	57.5
	15 Mins	14/06/2013 16:19	ST2	74.3	95.6	62.1	76.6	66.6
	15 Mins	18/06/2013 13:50	ST3	63.5	78.3	43.5	67.6	49.1
	15 Mins	14/06/2013 16:50	ST4	61.9	81.4	54.0	64.3	56.7
	15 Mins	14/06/2013 17:11	ST5	65.2	79.5	60.1	67.0	62.5

Period	Duration (T)	Monitoring Date and Times	Location	$L_{Aeq,T}$ (dB)	$L_{Amax,T}$ (dB)	$L_{Amin,T}$ (dB)	$L_{A10,T}$ (dB)	$L_{A90,T}$ (dB)
Peak 17:00 – 18:00	10 Mins	14/06/2013 17:41	ST1	70.1	84.0	52.0	74.5	56.1
	10 Mins	14/06/2013 17:28	ST2	73.9	90.9	61.4	76.4	66.2
	10 Mins	14/06/2013 17:55	ST3	65.2	79.7	48.4	69.1	53.3
	10 Mins	14/06/2013 18:09	ST4	62.3	82.3	54.3	65.3	57.1
	10 Mins	14/06/2013 18:22	ST5	69.3	90.1	59.7	71.4	63.4
Evening 19:00 - 23:00	15 Mins	14/06/2013 21:51	ST1	63.2	78.8	52.5	67.1	55.7
	15 Mins	14/06/2013 22:09	ST2	72.7	88.4	60.1	76.1	64.7
	15 Mins	14/06/2013 21:33	ST3	63.5	78.5	45.1	67.7	48.3
	15 Mins	14/06/2013 22:46	ST4	64.3	78.4	58.0	66.2	61.6
	15 Mins	14/06/2013 22:26	ST5	65.0	76.1	60.0	66.8	62.7
Night 23:00 - 07:00	15 Mins	14/06/2013 23:56	ST1	63.9	82.8	50.2	67.1	52.9
	15 Mins	14/06/2013 23:38	ST2	75.5	92.2	60.7	78.4	66.5
	15 Mins	15/06/2013 00:20	ST3	62.6	81.4	44.8	65.9	46.7
	15 Mins	14/06/2013 23:02	ST4	64.5	80.9	58.6	66.2	62.0
	15 Mins	14/06/2013 23:19	ST5	66.7	88.9	59.5	68.6	62.8

All values are sound pressure levels in dB re: $2x\ 10^{-5}$ Pa

5.0 Assessment of Key Effects

5.1 Noise Intrusion Assessment

Internal noise levels, at all the office spaces of the proposed development, based on the existing ambient noise climate, have been assessed both with windows open, where a reduction from a partially open window of 15 dB has been used, and with windows closed where an assumption of a glazing with a sound reduction of 30 dB has been used unless stated otherwise. Receptor location plans for the floors are shown within SK05 – SK08 of Appendix B.

The glazing and ventilation strategy has been designed to achieve BS 8233 internal L_{Aeq} daytime noise level criterion of 45 dB for open plan offices.

Table 5.1 Noise Intrusion Levels L_{Aeq}

Location	Daytime External L_{Aeq}	Internal L_{Aeq} with windows open	Internal L_{Aeq} with windows closed	Recommended Glazing Specification (SRI) to Achieve 45 dB L_{Aeq} daytime	Alternative Ventilation Required?
Ground Floor 1	40.5	25.5	10.5	30.0	No
Ground Floor 2	40.5	25.5	10.5	30.0	No
Ground Floor 3	40.5	25.5	10.5	30.0	No
Ground Floor 4	40.6	25.6	10.6	30.0	No
Ground Floor 5	71.1	56.1	41.1	30.0	**Yes**
First Floor 1	52.2	37.2	22.2	30.0	No
First Floor 2	52.9	37.9	22.9	30.0	No
First Floor 3	53.5	38.5	23.5	30.0	No
First Floor 4	54.4	39.4	24.4	30.0	No
First Floor 5	70.0	55.0	40.0	30.0	**Yes**
First Floor 6	69.7	54.7	39.7	30.0	**Yes**
First Floor 7	51.4	36.4	21.4	30.0	**Yes**
Second Floor 1	52.4	37.4	22.4	30.0	No
Second Floor 2	53.4	38.4	23.4	30.0	No
Second Floor 3	53.9	38.9	23.9	30.0	No
Second Floor4	54.8	39.8	24.8	30.0	No
Second Floor 5	68.7	53.7	38.7	30.0	**Yes**
Second Floor 6	68.4	53.4	38.4	30.0	**Yes**
Second Floor 7	68.4	53.4	38.4	30.0	**Yes**
Third Floor 1	54.0	39.0	24.0	30.0	No
Third Floor 2	53.6	38.6	23.6	30.0	No
Third Floor 3	54.3	39.3	24.3	30.0	No
Third Floor 4	55.1	40.1	25.1	30.0	No
Third Floor 5	67.5	52.5	37.5	30.0	**Yes**
Third Floor 6	67.3	52.3	37.3	30.0	**Yes**
Third Floor 7	67.2	52.2	37.2	30.0	**Yes**
Fourth Floor 1	53.8	38.8	23.8	30.0	No
Fourth Floor 2	52.6	37.6	22.6	30.0	No
Fourth Floor 3	52.1	37.1	22.1	30.0	No
Fourth Floor 4	51.5	36.5	21.5	30.0	No
Fourth Floor 5	56.9	41.9	26.9	30.0	No
Fourth Floor 6	57.3	42.3	27.3	30.0	No
Fourth Floor 7	57.6	42.6	27.6	30.0	No

Location	Daytime External L_{Aeq}	Internal L_{Aeq} with windows open	Internal L_{Aeq} with windows closed	Recommended Glazing Specification (SRI) to Achieve 45 dB L_{Aeq} daytime	Alternative Ventilation Required?
Fourth Floor 8	57.4	42.4	27.4	30.0	No
Fifth Floor 1	53.8	38.8	23.8	30.0	No
Fifth Floor 2	53.0	38.0	23.0	30.0	No
Fifth Floor 3	52.9	37.9	22.9	30.0	No
Fifth Floor 4	54.7	39.7	24.7	30.0	No
Fifth Floor 5	62.7	47.7	32.7	30.0	**Yes**
Fifth Floor 6	62.9	47.9	32.9	30.0	**Yes**
Fifth Floor 7	62.5	47.5	32.5	30.0	**Yes**

Based on the assumption of standard double glazing (e.g. 4mm/16mm/4mm), internal noise levels within proposed office spaces are predicted to meet the required criteria with windows closed.

However, should windows be open along the facade overlooking Jamestown Road, the internal noise criteria will be exceeded. Therefore, sufficient levels of ventilation will need to be achieved through the means of openable windows on facades excluding the facade over looking Jamestown Road. Otherwise, an alternative means of ventilation will be required in order to meet both ventilation and internal ambient noise criteria. Alternative ventilation can be provided in several ways from acoustic trickle vents (which need to have the same acoustic performance as the glazing), other passive ventilation systems or mechanical ventilations systems.

5.2 Building Services Plant Noise Assessment

This assessment has been undertaken in order to establish the maximum external plant noise levels for the proposed development. The assessment compares the predicted average noise levels from proposed building service plant (BSP) noise, with the measured background noise L_{A90} at the surrounding residential receptors (worst case façade direction and floors were selected). As the proposed plant noise may contain a 'distinguishable hum' or other tonal or impulsive characteristic which may be perceptible at nearby sensitive receptor location, a 5 dB acoustic feature correction (as specified in Planning Condition 7 of planning permission reference 2013/8265/P) has been added to create the Plant 'Rating Level at Receptor'.

The noise level data associated with the air handling and boiler flue termination are presented in section 3.0. In order to take into account the cumulative impact of plant noise, maximum external noise breakout from ground and basement level plant and future roof mounted condensers have been established by defining different sound power levels at point and area source representative of the noise breakout through the ground level vents and from roof level condensers. When the sound pressure levels are set as shown in Table 5.2, the noise rating levels are 5 dB below the background levels at all existing sensitive receptor locations during daytime and night-time as shown in Table 5.3

Table 5.2 Proposed Emission Limits for BSP as Modelled

BSP Location	Sound Pressure Level at 1 metres from BSP	
	Daytime Emission Limit (dB(A)	Night-time Emission Limit (dB(A)
Ground Floor vent, South of Building	61.0	53.0
Roof Mounted Condenser Units	80.0	80.0

Table 5.3 Assessment for Proposed Building Services Plant

Ref	Existing Background L_{A90}		Noise rating level from plant (with +5 dB Correction)		BS 4142 Score	
	Daytime	Night-time	Daytime	Night-time	Daytime	Night-time
R1	55.9	49.3	42.9	43.8	-13.0	-5.5
R2	55.9	49.3	35.0	34.9	-20.9	-14.4
R3	56.0	52.9	36.9	36.9	-19.1	-16.0
R4	56.0	52.9	37.4	37.4	-18.6	-15.5
R5	56.0	52.9	43.8	43.8	-12.2	-9.1

All values are sound pressure levels in dBA re: 2×10^{-5} Pa.

Based on the above assessment, the proposed plant would be compliant with the requirements of Planning Condition 7.

6.0 Conclusions

NPPF 123 A & B

In considering the NPPF test in section 123, points A & B, the proposed development is not expected to have an 'adverse impact' on health or quality of life. Similarly, with regard to NPPF (123) point B, it is considered that all 'adverse impacts on health and quality of life' (relating to noise) are mitigated by the use of the following mitigation.

Glazing and Ventilation Strategy

A glazing and ventilation strategy has been provided which achieves both ventilation and internal ambient noise level requirements of L_{Aeq} daytime noise level criteria of 45 dB for open plan offices of the proposed development. The suggested strategy will be achievable.

Plant Noise Assessment

A building service plant noise assessment has been undertaken in accordance with Condition 7 of Planning Permission reference 2013/8265/P. Noise emission limits have been recommended with the aim of achieving a plant noise rating level at neighbouring residential properties of at least 5 dB below the existing background noise levels which are considered to be achievable.

NPPF 123 C & D

Given that nearby the site is surrounded by sensitive residential and commercial properties to the east and west, it is not considered that existing businesses wanting to develop would be particularly restricted by the introduction of the new sensitive use of the proposed development.

The development is situated in a CPRE Zone 1 area of tranquillity (Zone 10 being the most tranquil and Zone 1 being the least tranquil), as such NPPF 123 point D is not considered to apply to this site.

Appendices

Appendix A – Acoustic Terminology and Abbreviations

Acoustic Terminology

dB — Sound levels from any source can be measured in frequency bands in order to provide detailed information about the spectral content of the noise, i.e. whether it is high-pitched, low-pitched, or with no distinct tonal character. These measurements are usually undertaken in octave or third octave frequency bands. If these values are summed logarithmically, a single dB figure is obtained. This is usually not very helpful as it simply describes the total amount of acoustic energy measured and does not take any account of the ear's ability to hear certain frequencies more readily than others.

dB(A) — Instead, the dBA figure is used, as this is found to relate better to the loudness of the sound heard. The dBA figure is obtained by subtracting an appropriate correction, which represents the variation in the ear's ability to hear different frequencies, from the individual octave or third octave band values, before summing them logarithmically. As a result the single dBA value provides a good representation of how loud a sound is.

L_{Aeq} — Since almost all sounds vary or fluctuate with time it is helpful, instead of having an instantaneous value to describe the noise event, to have an average of the total acoustic energy experienced over its duration. The $L_{Aeq,\ 07:00 - 23:00}$ for example, describes the equivalent continuous noise level over the 12 hour period between 7 am and 11 pm. During this time period the L_{pA} at any particular time is likely to have been either greater or lower that the $L_{Aeq,\ 07:00 - 23:00}$.

L_{Amin} — The L_{Amin} is the quietest instantaneous noise level. This is usually the quietest 125 milliseconds measured during any given period of time.

L_{Amax} — The L_{Amax} is the loudest instantaneous noise level. This is usually the loudest 125 milliseconds measured during any given period of time.

L_n — Another method of describing, with a single value, a noise level which varies over a given time period is, instead of considering the average amount of acoustic energy, to consider the length of time for which a particular noise level is exceeded. If a level of x dBA is exceeded for say. 6 minutes within one hour, then that level can be described as being exceeded for 10% of the total measurement period. This is denoted as the $L_{A10,\ 1\ hr}$ = x dB.

The L_{A10} index is often used in the description of road traffic noise, whilst the L_{A90}, the noise level exceeded for 90% of the measurement period, is the usual descriptor for underlying background noise. L_{A1} and L_{Amax} are common descriptors of construction noise.

R_w — The *weighted sound reduction index* determined using the above *measurement* procedure, but weighted in accordance with the procedures set down in BS EN ISO 717-1. Partitioning and building board manufacturers commonly use this index to describe the inherent sound insulation performance of their products.

Abbreviations

CADNA – Computer Aided Noise Abatement

DMRB – Design Manual for Roads and Bridges

HGV – Heavy Goods Vehicle

PPG24 – Planning Policy Guidance

UDP – Unitary Development Plan

UKAS – United Kingdom Accreditation Service

WYGE – WYG Environment

Appendix B – Sketches

SK01 Noise Monitoring Locations

SK02 Building Services Plant Assessment Receptor Locations

SK03 Daytime $L_{Aeq,16hr}$

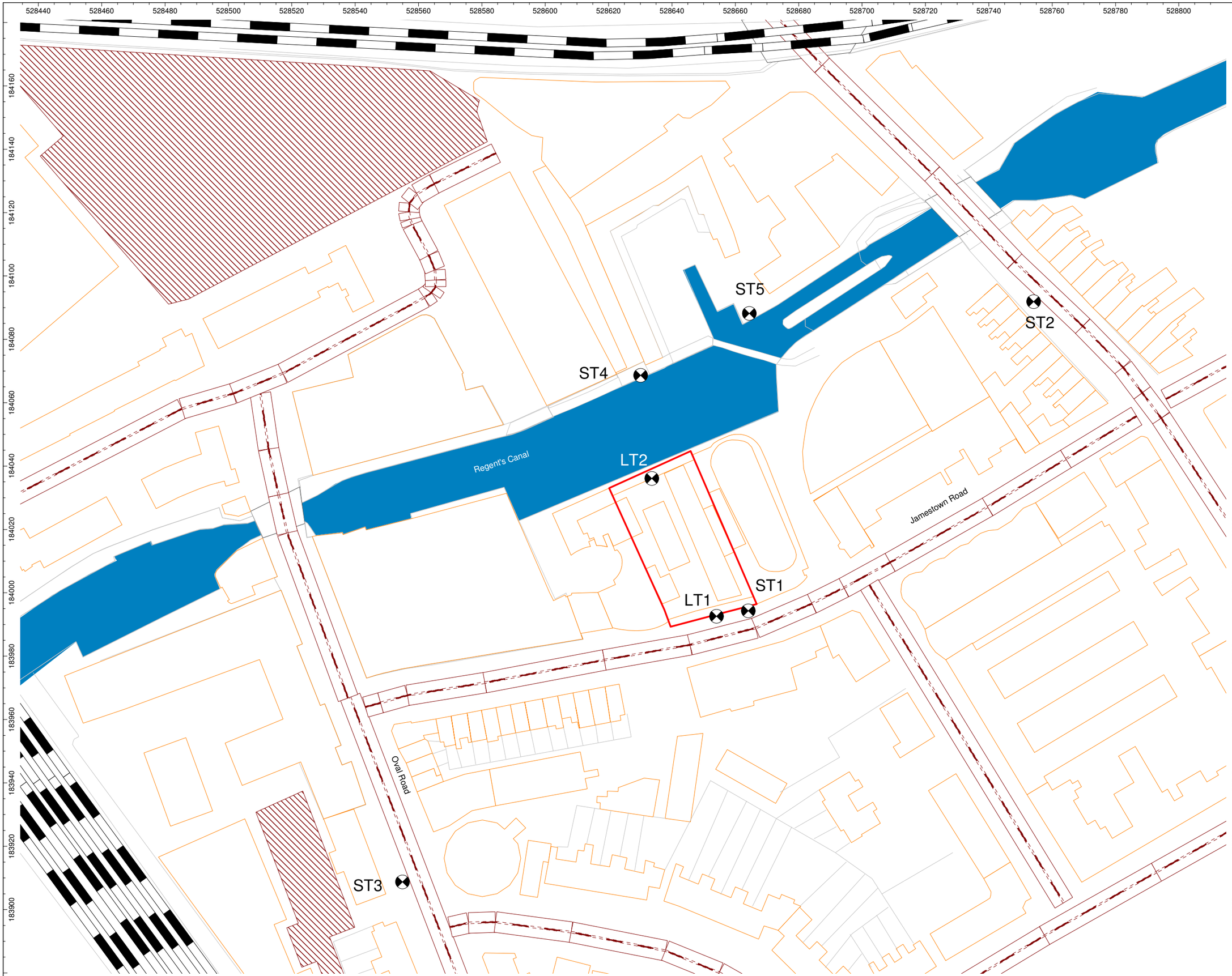
SK04 Night-time $L_{Aeq,8hr}$

SK05 Ground Floor Noise Intrusion Receptor Locations

SK06 1st Floor – 3rd Floor Noise Intrusion Receptor Locations

SK07 4th Floor Noise Intrusion Receptor Locations

SK08 5th Floor Noise Intrusion Receptor Locations



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London & Regional (Bewlay House) Ltd.

Project:
32 Jamestown Road

Project Number:
A081532

Drawing Title / Scenario:
Noise Monitoring Locations

Drawing Number:
SK01

Scale : Not to scale

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Avalon Way
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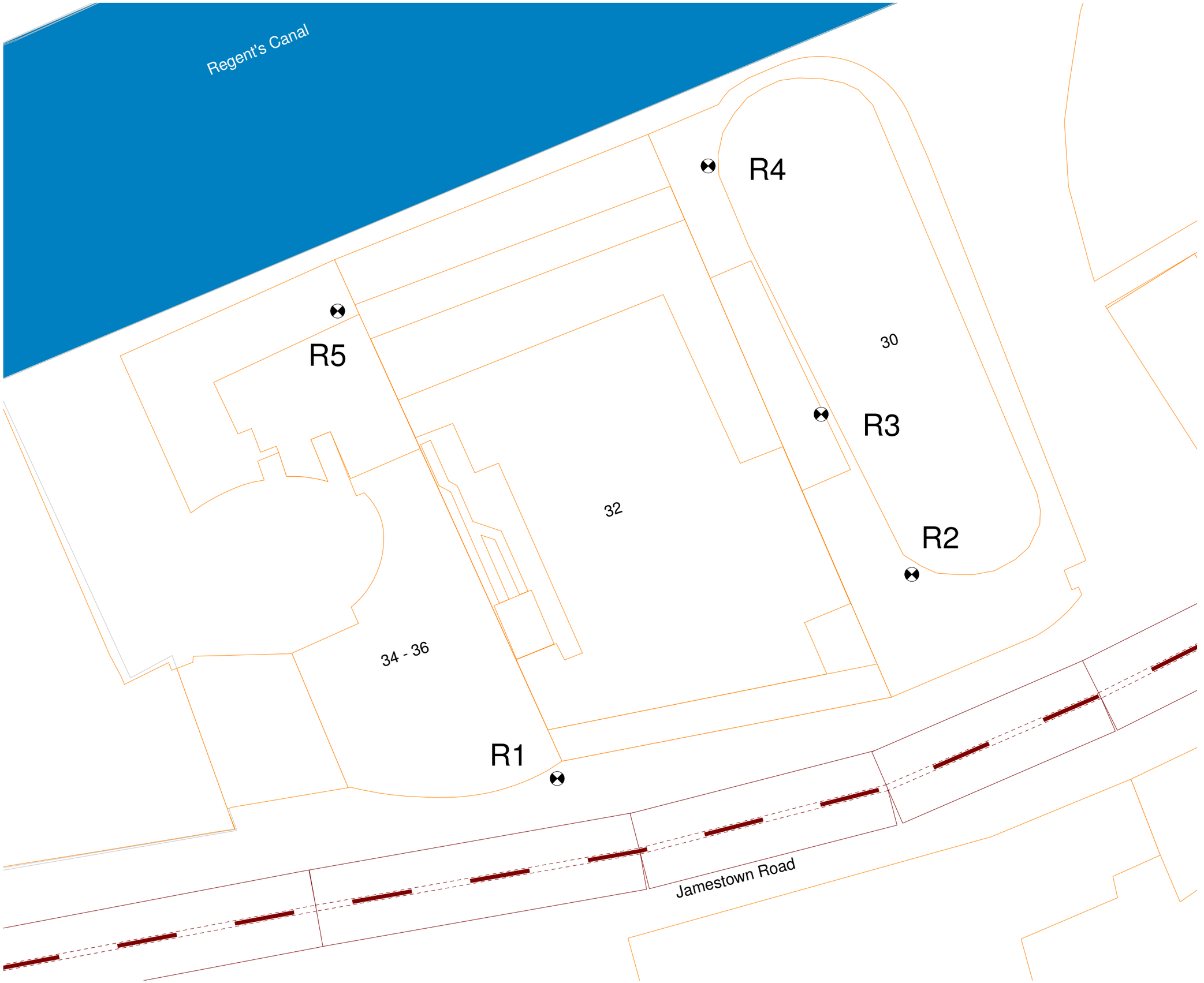
Tel 0116 234 8000



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Project Number:
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Drawing Title / Scenario:
BSP Assessment Sensitive Receptor Locations

Drawing Number:
SK02

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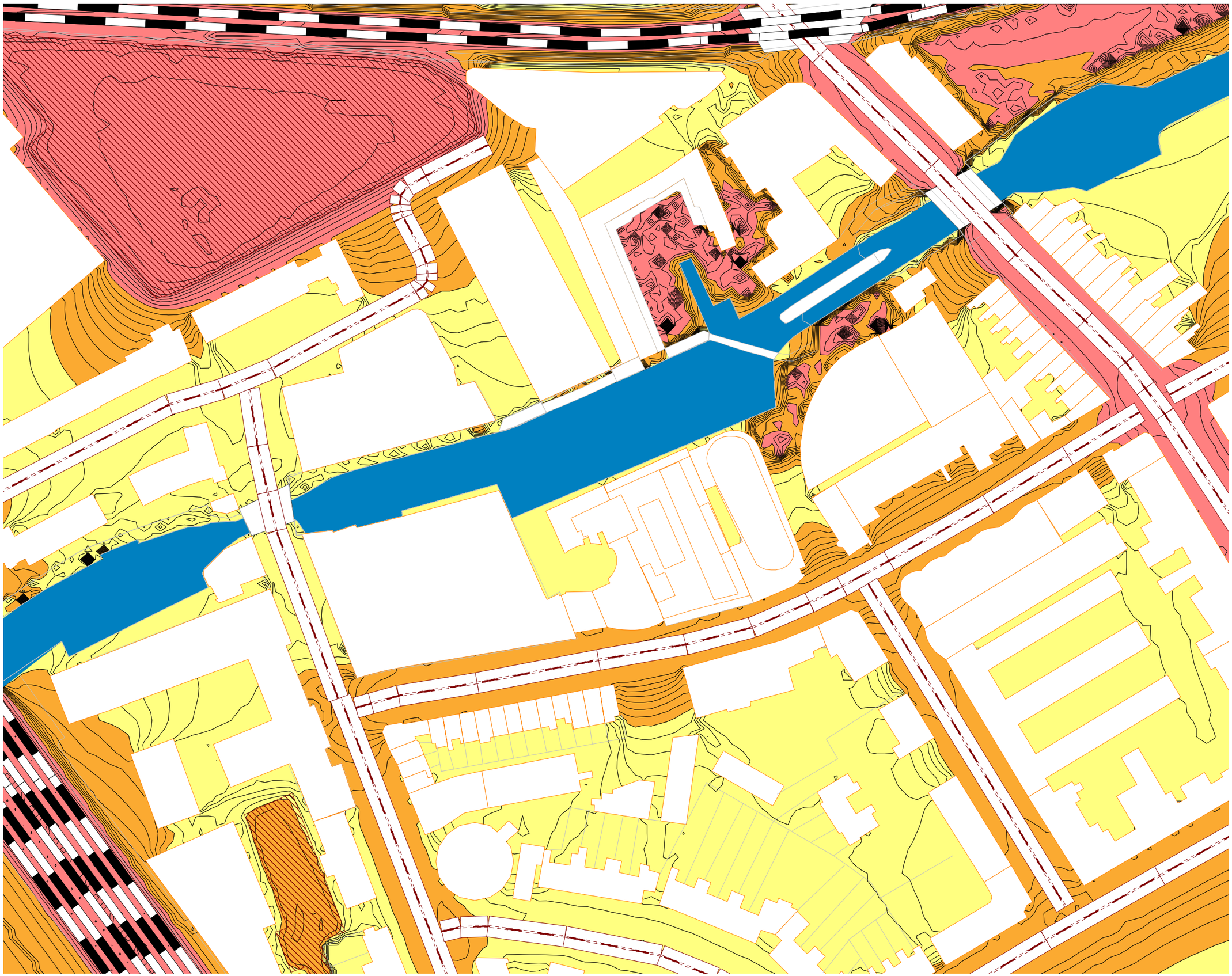

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Project Number:
A081532

Drawing Title / Scenario:
Daytime LAeq 16hr

Drawing Number:
SK03

Key:

- 0.0 - 55.0 dB
- 55.0 - 63.0 dB
- 63.0 - 72.0 dB
- 72.0 - 90.0 dB

Scale : Not to scale

Please note: Noise contour plots are for illustrative purposes only

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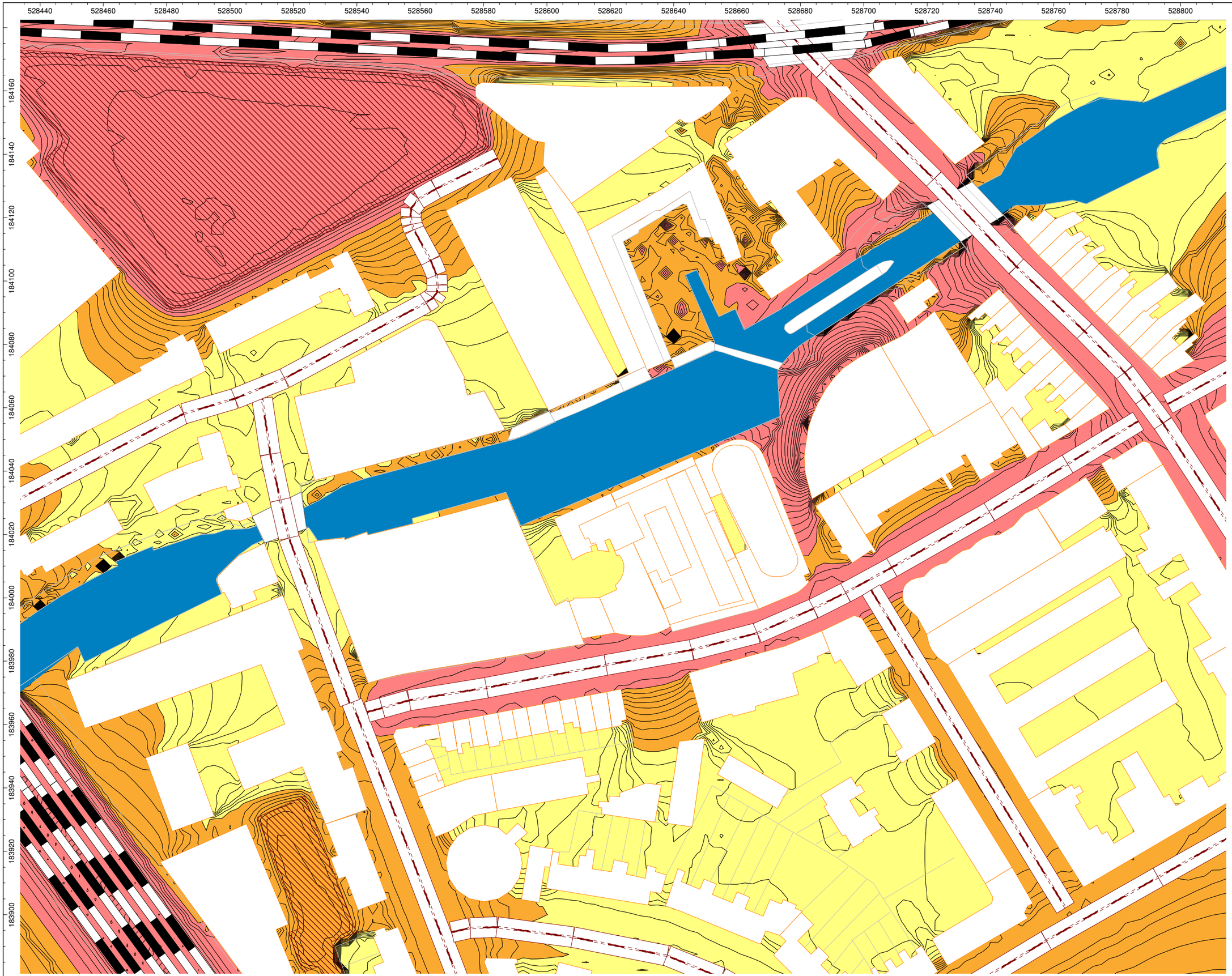

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Project:
32 Jamestown Road

Project Number:
A081532

Drawing Title / Scenario:
Night-time LAeq 8hr

Drawing Number:
SK04

Key:

- 0.0 - 45 dB
- 45.0 - 57.0 dB
- 57.0 - 66.0 dB
- 66.0 - 90.0 dB

Scale : Not to scale

Please note: Noise contour plots are for illustrative purposes only

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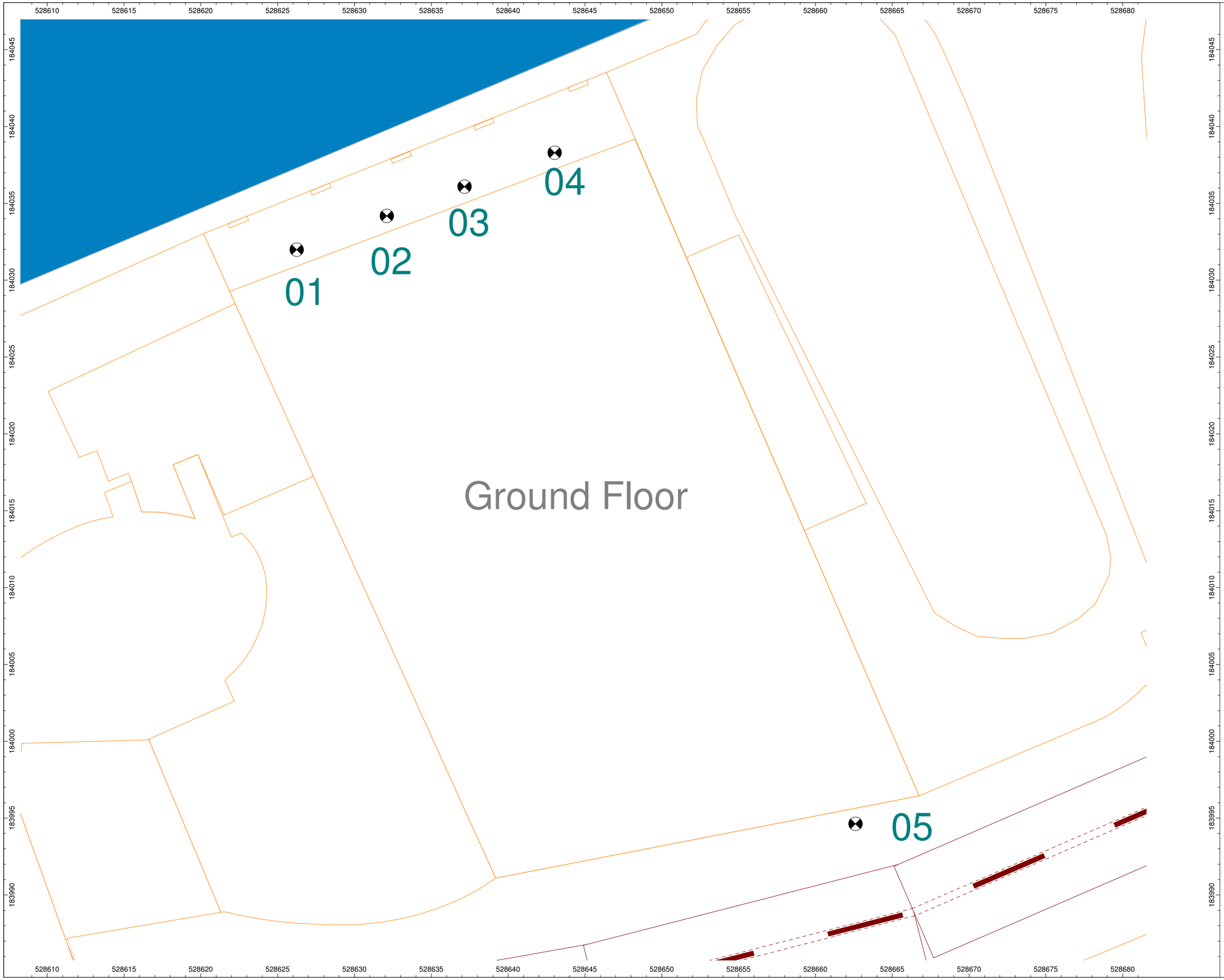

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London & Regional (Bewlay House) Ltd.

Project:
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Project Number:
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Drawing Title / Scenario:
Ground Floor Receptor Locations

Drawing Number:
SK05

Scale : Not to scale

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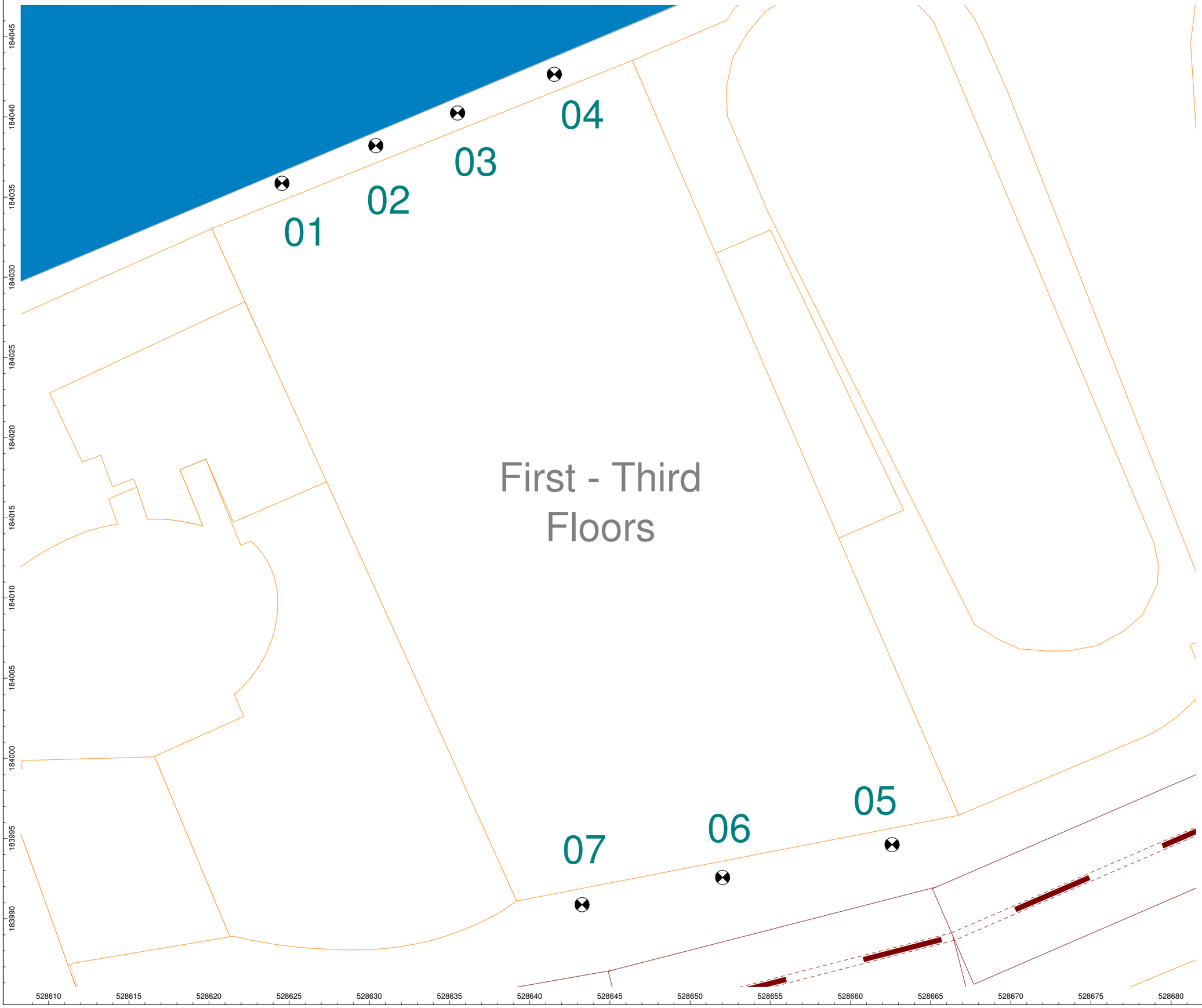

Client:
London & Regional
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Project:
32 Jamestown Road

Project Number:
A081532

Drawing Title / Scenario:
First - Third Floor
Receptor Locations

Drawing Number:
SK06

Scale : Not to scale

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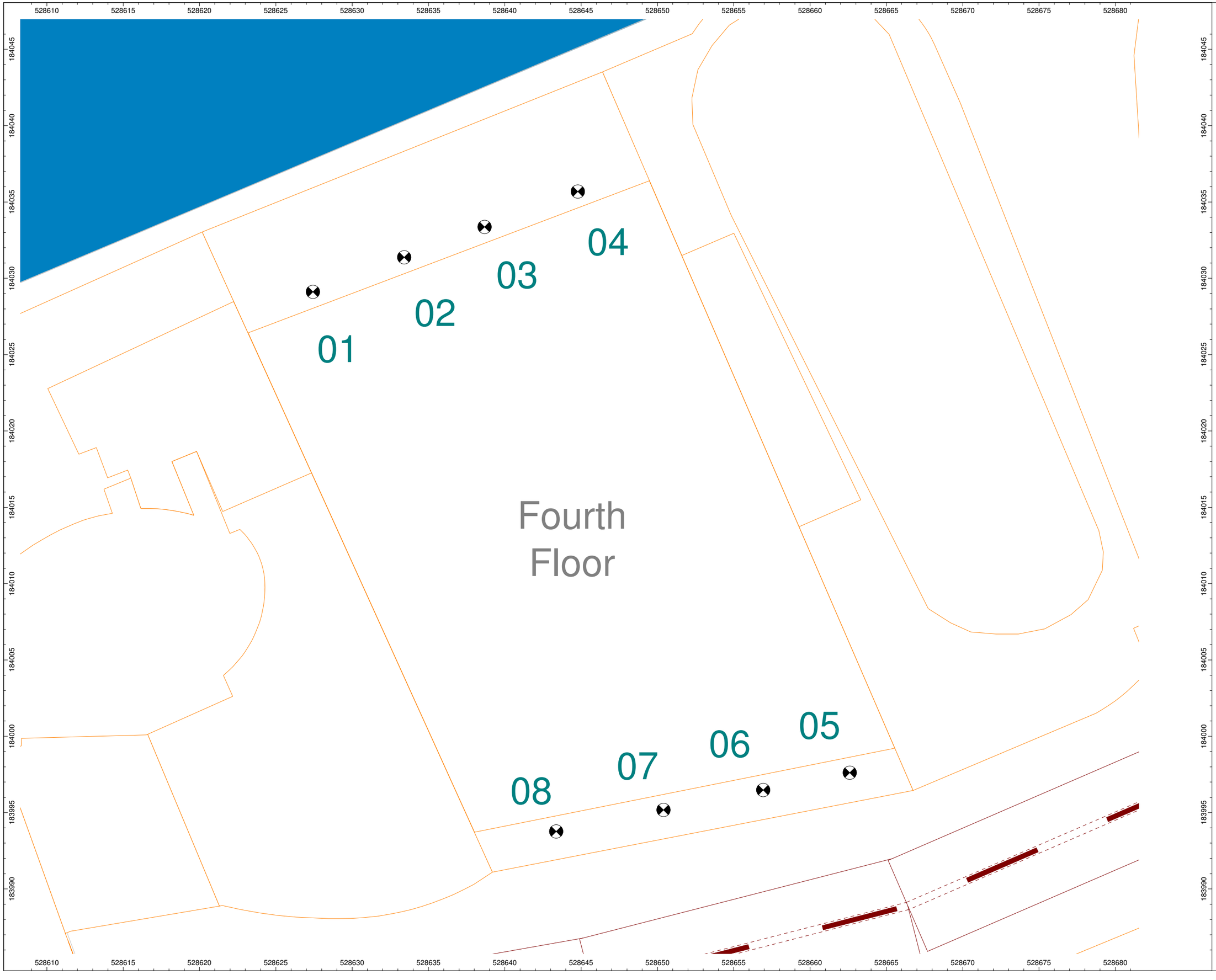

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Project:
32 Jamestown Road

Project Number:
A081532

Drawing Title / Scenario:
Fourth Floor
Receptor Locations

Drawing Number:
SK07

Scale : Not to scale

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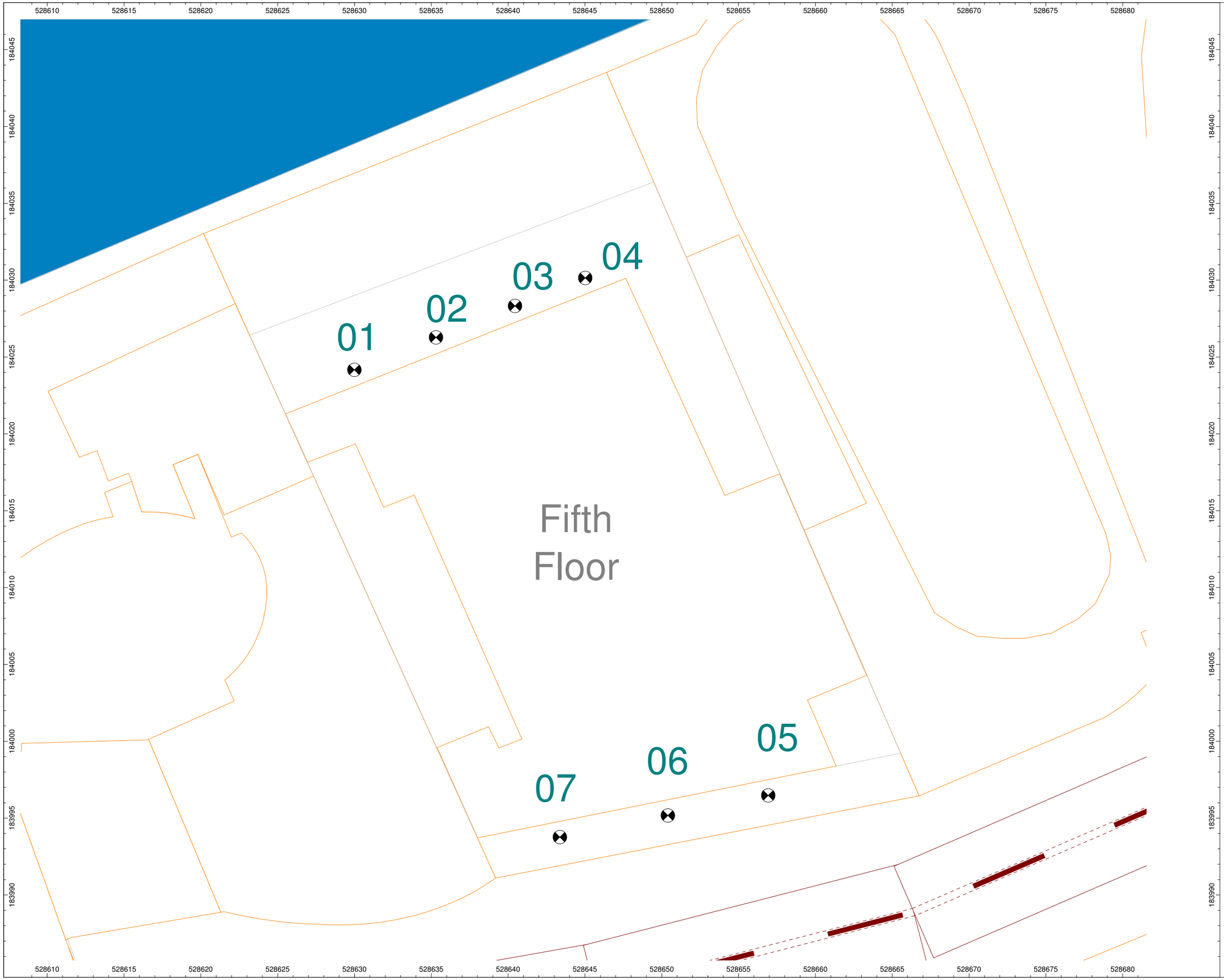

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Project:
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Project Number:
A081532

Drawing Title / Scenario:
Fifth Floor
Receptor Locations

Drawing Number:
SK08

Scale : Not to scale

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